STUDIES ON SOCIAL AND EDUCATION SCIENCES 2021

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PREFACE

Studies in the fields of education and social sciences have always been important in terms of their impacts on society. These studies have gained even more importance during the COVID-19 pandemic process. The impact of the pandemic period on children, schools and society has been demonstrated through such studies. This book also includes studies conducted during the pandemic period. The studies in this book contribute to the fields of education and social sciences by different research methods, participants, and contexts and add a global perspective to these fields. The book is divided into two sections related to studies on social sciences and education sciences. Each section includes four chapters. The chapter's contributors are from the following countries: the United States, Turkey, China, Indonesia, Russia, Rwanda, and Malaysia.

The first section starts with the chapter titled "Locus of Control Orientation and Pearlin Mastery Scores for Undergraduates Attending Hispanic-Serving Institutions" by Christine Dorsett, Michael Preuss, Eric Sosa, Jason Rodin, Jorje Ramos, and Chenoa Burleson from the United States. In this work, two large samples of students from HSIs return important findings that align with the cultural milieu of the region and that are mutually supportive and that Hispanic/Latinx students have significantly higher external locus of control than non-Hispanics which would be expected for members of a collectivist culture. In the second chapter titled "Relationship between the Learning Organization and Organizational Agility", Canan Yıldıran, Oya Önalan, and Gökhan Oruç Önalan from Turkey analyze the relationship between learning organization and organizational agility, the effect of a learning organization in achieving organizational agility, and the importance of learning for unlimited competition by identifying the relationship between them. Another chapter titled "The Perspective of Perinatal Women on Anti-COVID-19 Pandemic in Macao Society: A Qualitative Study" in this section is written by Xin Wang, Ming Liu, and Ka Ian Ho from China. The chapter highlights the effect of COVID-19 pandemic on pregnant women's life and pregnant women' various unusual challenges including psychological distress, interruption of prenatal health services, and financial constraints. This section ends with the chapter titled "The Implementation of Scientific Approach in Indonesian Language Course Tutorial for Students

of 2019 Remote Learning Program Unit at Open University" by Supriyono, Nurfuadi, M. Riyanton, Mustasyfa Thabib Kariadi, and Wartono from Indonesia. The chapter describes lecturer's planning, implementation, obstacles and attempts in implementing scientific approach through Indonesian Language teaching and learning for students of Remote Learning Program Unitof Open University of Purwokerto.

The second section consists of four chapters on education sciences. The chapter is titled "Learning Methods: Physical Education and the Relationship with the Learning Process during the COVID-19 Pandemic" by Galih Priyambada, Nanda Alfian Mahardhika , Januar Abdilah Santoso, and Jeane Betty Kurnia Jusuf from Indonesia. The authors mention that using video as an educational tool can provide optimal influence in efforts to improve physical education learning outcomes and support the application of online learning during the COVID -19 Pandemic. Another chapter titled "E-learning Opportunities: Post-pandemic Trends and its Implications for Russian Higher Education" by Svetlana Revinova, Inna Lazanyuk, and Svetlana Balashova from Russia in this section is also about the effect of the pandemic. The chapter identifies the advantages and disadvantages of online learning and highlights the factors that determine the use of this type of education. The chapter titled "Secondary school Teachers' Levels of Integrating ICT Tools into Biology Teaching and Learning Process" by Jean Jacques Munyemana, Florien Nsanganwimana, and Gaspard Gaparayi from Rwanda explores the extent to which secondary school Biology teachers integrate computer and other ICT technologies into teaching and learning process as well as the challenges they face as far as the use of ICT in teaching and learning biology is concerned. The last chapter of the book is titled "The Role of Educational Technology in the COVID-19 Pandemic" by Nor Azni Abdul Aziz, Soaib Asimiran, and Aminuddin Hassan from Malaysia and investigates the relationship between principal instructional leadership and three dimensions of teacher commitment to change in implementing School-Based Assessment (SBA) among secondary school teachers.

Citation

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SECTION I - STUDIES ON SOCIAL SCIENCES

Chapter 1 - Locus of Control Orientation and Pearlin Mastery Scores for Undergraduates Attending Hispanic-Serving Institutions

Christine Dorsett, Michael Preuss, Eric Sosa, Jason Rodin, Jorje Ramos, Chenoa Burleson

Chapter Highlights

- In a project funded by the National Science Foundation, two surveys of students at Hispanic-Serving Institutions (HSI) were completed. The first resulted in input from 463 students at 14 Hispanic-Serving Institutions (HSIs) in New Mexico and Texas. The second included responses from 829 students at four HSIs in north Texas, a state university and three community colleges in its service area.
- This chapter addresses findings from two related subsets of queries, locus of control questions and the Pearlin Mastery Scale.
- On the first survey, Hispanic/Latinx students were found to have both a higher internal and higher external locus of control orientation than their non-Hispanic peers. Regression analysis of Pearlin Mastery Scale scores for the 829 individuals who responded to the second survey showed no significant differences by ethnicity/race, gender, age, status as a first-generation college student, type of institution attended, credit hours completed, years in college, and employment status.
- These results have direct implications for programming at all HSIs in the south-central United States and, by extension, for the over 320 HSIs in the southwest United States.

Introduction

In the US, it is a well-known and recognized fact that students from underrepresented groups have suffered longstanding inequities in educational settings. This includes entrance into and success within the higher education system (Adwere-Boamah, 2015; National Science Board, 2020; Whittaker & Montgomery, 2012). The enormous growth in the Hispanic population of the United States and the growth of the Hispanic population in the higher education system has made the imbalance more evident (Gramlich, 2017; National Center for Education Statistics, 2020). Despite being the largest minority group in the country (US Census Bureau, 2021) and in higher education (Postsecondary National Policy Institute, 2021), persistence in college and degree completion rates paralleling that of persons who identify with a White, European background has not evolved (Chun et al., 2016; Gramlich, 2017). These disparities emphasize the need to understand the characteristics of Hispanic/Latinx students in order to better serve their needs in general and in all spheres of education. As a result, an increasing number of studies are focusing on the background, experiences, and perspectives of Hispanic/Latinx individuals and students in a variety of settings and contexts (Champagne et al., 2016; Flores & Park, 2015: Ramos et al., 2021; Rodriguez Amaya et al., 2018; Zhan & Xiang, 2018).

Hispanic Population

The US has seen a shift in demographics over the last few decades. The country has, for the first time in its history, more than 10% of its citizens in each of the three largest racial groups simultaneously, White, Hispanic, and African American/Black (Abascal, 2015). In addition, the percent of the population that identifies as Hispanic/Latinx has surpassed each of the other groups historically referred to as minorities (Abascal, 2015; U.S Census Bureau, 2016). In 2000, the Hispanics made up 12.5% of the overall population in the US, in 2016 that percentage reached 17.6% (Ruiz et al., 2018; U.S. Census Bureau, 2016) and it is now 18.5% (US Census Bureau, 2021). This represents an increase of nearly 50% in a 20-year period.

In addition, individuals identifying as Hispanic/Latinx are more broadly dispersed across the US (Brooks & Winchell, 2015). Concentration of Hispanic populations was previously more characteristic of states bordering Mexico, such as Texas and California (Brooks & Winchell, 2015). But Hispanic/Latinx individuals have an increasingly large presence in the South and

Midwest as well as the East Coast of the US (Brooks & Winchell, 2015) with even rural Midwestern communities becoming significantly to predominantly Hispanic/Latinx (Kilen, 2017; Kolmar, 2020).

Hispanics and Higher Education

Due to the increase in the Hispanic/Latinx population overall in the US and their having the youngest average age of all ethnic/racial groups in the country (Excelencia in Education, 2020; Flores & Park, 2015), students identifying as Hispanic/Latinx are now entering higher education at all-time highs (Gramlich, 2017). This is paralleled by all-time low high school drop-out rates for Hispanics. A record low was recorded in 2016 with only 6% leaving high school before graduating (Gramlich, 2017; U.S. Census Bureau, 2016). The relative increase in higher education enrollment by Hispanic/Latinx students is larger than that for any other historically underrepresented group in the United States (National Center for Education Statistics, 2017). In 2019, the college enrollment percentage for Hispanics 18-24 years of age was at an all-time high of 36%, only five percentage points behind Whites of the same age (Postsecondary National Policy Institute, 2021).

Although Hispanics are entering higher education at record setting levels, their retention rate is still low (Chun et al., 2016). Excelencia in Education's U.S. Fact Sheet (2020) shows Hispanic/Latinx students discontinue pursuit of degrees at two- and four-year institutions at higher rates than their White peers. Retaining them in study is a significant concern across higher education (Green & Wright, 2017; Lotkowski et al., 2004; Pappamihiel & Moreno, 2011).

First Generation Status

A challenge that has been investigated for decades (Pascarella et al., 2004; Terenzini et al., 1997; York-Anderson & Bowman, 1991) and that is often faced by Hispanic/Latinx students is being first-generation college students (Pyne & Means, 2013; Reyes & Nora, 2012). First-generation students are commonly understood to be the first person in their immediate family to attend an institution of higher education a conception slightly broader than the definition in the Higher Education Act of 1965, individuals "whose parents did not complete a baccalaureate degree" (US Department of Health, Education, and Welfare, 1965, para. 19).

Hurtado, Ramirez, and Cho note that over fifty percent of Latinx students entering higher education are first-generation students (as cited in Batista et al., 2018, pg. 7). Support for that assertion was found by the authors of this paper in respect to students attending HSIs in north Texas (Preuss et al., 2021) although the definition of first-generation college student employed included students pursuing degrees at two- and four-year institutions.

First-generation college students have more difficulties transitioning from secondary education to higher education (Pascarella et al., 2004). This can include financial (Hurtado, Rameriz & Cho in Batista et al., 2018), social (Katrevich & Aruguete, 2017; Martinez et al., 2009), cultural (Stephens et al., 2012; Ward et al., 2012), and academic elements (Katrevich & Aruguete, 2017; Martinez et al., 2009) as well as the stress of dislocation if the student moves out or away from their home or community (Pascarella et al., 2004). An unfortunate outcome is that first-generation students are more likely to drop out of higher education after the first year than students whose parents hold college degrees (Goodman et al., 2020; Woosley & Shepler, 2011).

Hispanic/Latinx students whose families have college experience often do not attain the same level of retention as second-generation students from other ethnic groups (Kouyoumdjian et al., 2017; Latino et al., 2020). Correspondingly, Hispanic students, first-generation or otherwise, are also dropping out of higher education at the highest rates of all minority groups in the US (Kouyoumdjian et al., 2017; Latino et al., 2020). Yet, Hispanics are much more likely to complete to degree if they attend an institution designated as an HSI or begin their academic career at a community college (Kouyoumdjian et al., 2017). This is likely due to a combination of factors operating in academic, psychosocial, financial and/or cultural realms (Hurtado, Rameriz & Cho in Batista, Collado & Perez, 2018; Katrevich & Aruguete, 2017; Kouyoumdjian et al., 2017; Ward et al., 2012).

Cultural Influences

Individualism is a primary characteristic of mainstream culture in the United States (Ruiz et al., 2018). Individualism is generally characterized by a cultural orientation towards the self as an independent being with emotional independence, self-reliance, and freedom of choice (McCarty & Shrum, 2001). On the other hand, collectivism emphasizes conformity and group harmony, with the self being seen as a member of a larger group (McCarty & Shrum,

2001). Individualism is typically found in Western cultures, such as the US, Canada, Australia, and the United Kingdom (Cheng et al., 2013). Collectivism is widely recognized as a characteristic of Eastern cultures like Japan, China, and Korea (Cheng et al., 2013).

Collectivism has two subcategories. Harmony collectivism emphasizes balance and harmony in social relationships (Ruiz et al., 2018). Its foundations in Eastern cultures exist in Confucianism, Buddhism, and Daoism, which emphasize the importance of avoiding conflict in social relationships and avoiding displays of negative emotions (Cheng et al., 2013; Lin & Huang, 2014; Ruiz et al., 2018). Harmony collectivism also highlights the ability of one to adapt to his/her environment and cope with changes in the environment (Cheng et al., 2013; Lin & Huang, 2014; Ruiz et al., 2018).

The other subcategory of collectivism is convivial collectivism (Ruiz et al., 2018). Convivial collectivism is the form prevalent in Latinx and Hispanic cultures, especially those in the United States and Central and South America (Ruiz et al., 2018). The focus of convivial collectivism is the construction and maintenance of social relationships through positive emotions, interdependence, and shared activities (Ojeda et al., 2014; Ruiz, 2005). This pattern helps build social capital and communal coping, the ability for members of the group to share and take turns accessing this social capital in times of need (Cheong, 2006; Ruiz et al., 2018). This can include soliciting others for help with family-oriented tasks, including anything from babysitting to assistance with a monthly bill or care of an elderly family member (Calzada et al., 2013). Important values of convivial collectivism include familismo, simpatia, and respeto, the values related to family, interpersonal harmony, and respect (Calzada et al., 2013; Knight et al., 2010; Knight et al., 2018; Lorenzo-Blanco et al., 2012). This research team recently confirmed that non-Hispanics working at HSIs in the south-central United States recognize these as elements of Hispanic culture and that their Hispanics/Latinx peers were even more predisposed to acknowledge them as elements of Hispanic cultures (Preuss, et al. 2019; Preuss et al. 2020).

Familismo

Familismo, also known in the literature as familism, is a key value in convivial collectivism (Calzada et al., 2013; Ruiz et al., 2018). Familismo is defined as strong in-group frame of reference that emphasizes the importance of family goals (Ruiz, 2005; Ruiz et al., 2018). This

value can be seen in Hispanic/Latinx contexts in the emphasis on time with family and reliance on family social support (Calzada et al., 2013; Lorenzo-Blanco et al., 2012).

There are two interrelated forms of familismo, attitudinal and behavioral (Calzada et al., 2013). Attitudinal familismo relates to the individual's perspective of family, which include feelings of familial loyalty, elevating family goals over personal goals, honor for the family, and interconnectedness with family members (Steidel & Contreras, 2003; Stein et al., 2014). Behavior familismo refers to the actions extending from attitudinal familismo and includes family assistance with childrearing, elderly care, and residing near family or shared living arrangements with multigenerational members of the family (Calzada et al., 2013).

Familismo has a continuum of benefits and costs. In a study examining responses to questions asked of Latinx mothers regarding familismo, several benefits found were help with childcare and financial needs as well as easily accessible social capital. Costs were sacrifice of personal space, psychological stress, loss of freedom of choice, and potential sacrifice of one's personal goals like attending college (Calzada et al., 2013). Sacrifices of that type occur when obligations to the family outweigh the wants or needs of the individual (Calzada et al., 2013; Knight et al., 2018).

Simpatia

Simpatia is another cultural concept relating to convivial collectivism in many Hispanic/Latinx cultures. Individuals who possess high simpatia are characteristically polite, agreeable, and friendly (Ramirez-Esparza et al., 2008). In fact, simpatia is commonly thought to align with the "Big Five" personality trait of Agreeableness, which encompasses generosity, kindness, sympathy, and politeness (Knight et al., 2010; Knight, et al., 2018; Ramirez-Esparza et al., 2008). Simpatia is also linked with the promotion of harmony, conflict avoidance, and the limiting of negative behaviors in public settings (Lorenzo-Blanco et al., 2012; Ramirez-Esparza et al., 2008).

Respeto

Respeto is also a cultural concept that is part of convivial collectivism and Hispanic/Latinx cultures. It is valuing and exhibiting respect for family members and elders and encourages

this behavior to protect the harmony in familial relationships (Espinosa-Hernández et al., 2017; Miller, 2013). This, however, is not to be confused with familismo, which advocates for familial loyalty, whereas respeto dictates that family members are to behave and treat others, especially family, with respect and exhibit respectful, polite behavior (Knight et al., 2010; Knight et al., 2018; Lorenzo-Blanco et al., 2012). Respeto involves learning and filling one's place in the social order of the family especially in relation to age, gender, and social status (Calzada et al., 2010). This can include such behavior as being considerate and thoughtful of adults, particularly during conversation, as younger children are expected not to interrupt and to learn how to be polite and take turns (Calzada et al., 2010; Lorenzo-Blanco et al., 2012).

Each of the values discussed, familismo, simpatia, and respeto, is related to convivial collectivism as it is practiced in Hispanic/Latinx contexts. Because each influences formulation of individual identity within family and culture, they have the potential to influence broader psychosocial constructs like locus of control and mastery.

Locus of Control

Because of increasing numbers of the Hispanic/Latinx students entering higher education, it is important to identify possible constructs and variables that might be contributing to the low retention rates of these students (Kouyoumdjian et al., 2017). One important cultural variable that deserves examination is that of locus of control (LOC). Developed by Rotter (1966), LOC refers to the degree to which a person feels s/he is in control of his/her choices and environment. According to Rotter (1996),

> an individual perceives the outcome of an event as being either within or beyond his or her personal control and understanding. An 'internal' believes that one has influence over outcomes through ability, effort, or skills. On the other hand, "externals" believe that forces outside the control of the individual determine outcomes.

LOC occurs on a continuum, from high internal locus of control to high external locus of control (Cheng et al., 2013; Rotter, 1966). Internal locus of control, as just noted, is the degree to which a person feels their environment is influenced by their own actions and decisions (Cheng et al., 2013; Kang et al., 2013; Rotter, 1966). In contrast, external locus of control refers to the degree to which a person feels that their environment is influenced by

outside forces, such as luck, chance, or fate (Cheng et al., 2013; Kang et al., 2013; Rotter, 1966).

LOC is one of the many cultural lenses impacting peoples' view of the world that can have implications on different aspects of life. Depending where a person falls on the continuum, there are a wide variety of implications including patterns of cognition and acting to influence one's life and environment (Cheng et al., 2013; Mueller & Thomas, 2001). Measures of LOC have been researched in numerous cultures and countries, and this psychological construct has been found to be consistent across the globe (Cheng et al., 2013; Mueller & Thomas, 2001; Smith et al., 2007). Furthermore, LOC orientation seems to be highly culturally dependent (Cheng et al., 2013; Smith et al., 2007). LOC orientation is thought to be acquired and not an innate process, and its means of transmission and reinforcement are highly dependent on social learning (Cheng et al., 2013; Mueller & Thomas, 2001).

Due to the acquisitional nature of this construct, culture plays a large role in what type of LOC orientation people are likely to possess. For instance, persons in individualistic cultures typically score higher on measures of internal LOC in which a person feels more able to impact or manipulate his/her environment (Cheng et al., 2013; Spector et al., 2001). This includes many Western cultures, such as those of the US, UK, Canada, and Australia. Additionally, persons who score higher on external LOC are likely to be from collectivistic cultures and feel outside forces are more pivotal in the determination of the outcomes (Cheng et al., 2013; Hofstede et al., 2010). External LOC is commonly encountered in Asian and Latin American cultures (Cheng et al., 2013; Spector et al., 2001).

What is especially noteworthy is that LOC orientation has been thoroughly studied and has implications in a variety of areas of life. Many studies have found that having a high internal locus of control is correlated with several other positive constructs. This includes several health and wellness constructs, overall stress levels, academic stress and satisfaction with life, self-efficacy, metacognition, and academic success (Bollini et al., 2004; Hrbáčková et al., 2012; Kang et al., 2013; Karaman et al., 2018; Roddenberry & Renk, 2010).

LOC orientation has also been explored in the health and wellness setting. In a study examining the differences in viewpoints of Hispanic/Latinx individuals in the healthcare setting, it was found that parties with a higher internal health LOC felt that their health care,

such as maintenance care of certain ailments, was more in their own control (Champagne et al., 2016). This type of orientation in the healthcare setting could have implications for how one views ability to impact and control chronic conditions like diabetes or high blood pressure. In a meta-analysis examining health attitudes and acculturation of Hispanics, it was found that parties with higher external LOC orientation exhibited decreased health benefits, likely due to external LOC leading to feeling less control over health and wellness (Valentine et al., 2008).

LOC orientation has also been found to moderate biological measures of stress. Bollini et al. (2004) examined the relationship between LOC orientation and cortisol levels, a symptomatic hormone released by the body during stress. Participants in this study were subjected to a stressful situation and had both cortisol levels and LOC orientation tested (Bollini et al., 2004). Participants who scored higher on external LOC measures had higher cortisol levels and were more likely to report feeling less control, whereas those scoring higher on internal LOC measures had lower cortisol levels and were more likely to report feelings of control during the induced stressful situation (Bollini et al., 2004).

Szabo, Chang, and Chancellor-Freeland's (2015) study also examined the effects of LOC orientation on cortisol levels. This study induced a stressful situation by giving participants a public speaking task and measured their speech performance and cortisol levels. It was found that those who exhibited higher levels of internal LOC had lower levels of cortisol, whereas those that scored higher on external LOC had higher cortisol levels (Szabo et al., 2015). In addition, the individuals who scored higher on internal LOC had better performance ratings on the public speaking task (Szabo et al., 2015).

Karaman and associates (2018) conducted an elaborate study that examined the different mediating effects of achievement motivation and LOC in relation to academic stress and life satisfaction. In a study of over 300 college students, students were given measures of achievement motivation, satisfaction with life, academic stress, and LOC orientation (Karaman et al., 2018). It was found that students who had a higher external LOC also had higher levels of academic stress and lower life satisfaction, and that those who scored higher on internal LOC had less academic stress and higher life satisfaction (Karaman et al., 2018).

There is, however, little research in the area of LOC and Hispanic/Latinx individuals outside of health and wellness setting. There is virtually no information on LOC patterns among Hispanic/Latinx college students. That provided the impetus for the inclusion of the locus of control question set in the 2018 survey.

Pearlin Mastery Scale

The Pearlin Mastery Scale is a 7-question assessment (Pearlin & Schooler, 1978). The scale was developed in the 1970s to assess stress and coping (Pearlin & Schooler, 1978). Mastery is considered to be a coping resource which collectively "is social or personality resources that people use to help manage stressors and [that] might also attenuate the physiological impact of such stressors" (Roepke & Grant, 2011, p. 616). "Individuals with high levels of mastery trust that they are able to adapt their behaviours, or their circumstances, to reach their important goals, whilst those with low sense of mastery commonly feel powerless with regard to both their internal and external forces" (Clench-Aas et al., 2016, pp. 127-128). It is a "global sense of control or the belief that one has control over future important life circumstances" (Roepke & Grant, 2011, p. 616). Thus, mastery is a broad concept that some researchers include as "one of six components that comprise well-being" (Eklund et al., 2012, p. 381). "Those with a high sense of personal mastery may appraise themselves as capable of coping with or controlling problems in life, and therefore might be less physiologically-impacted by psychological stressors" (Roepke & Grant, 2011, p. 616) due to higher levels of this "personal resource related to coping, self-agency, the existence of a continuous self, empowerment, and well-being" (Eklund et al., 2012, p. 382).

These descriptions introduce the need to distinguish mastery from the related concept, locus of control.

> Given the heterogeneity within constructs of control, Skinner (1996) proposed basic distinctions regarding control constructs as an organizational framework. Important distinctions regarding definition and classification of control constructs include: 1) aspects of control (e.g., objective control, subjective control, and experiences of control), 2) agents, means, and ends of control, 3) retrospective versus prospective control, and 4) specific versus general control. Within this framework, Pearlin and Schooler's (1978) construct of personal mastery would be defined as a control belief that is subjective, prospective, general (or global), and involving the self as the agent of

> control. Mastery also reflects beliefs about the general controllability of the environment (i.e., contingency beliefs) as opposed to beliefs exclusively involving one's competence in controlling one's environment (Paquet, et al., 2010; Thompson & Spacapan, 1991). (Roepke & Grant, 2011, p. 617)

This description illustrates that mastery is closely related to locus of control (Roepke & Grant, 2011; Togari & Yonekura, 2015). Yet, "locus of control has more limited focus on the control of conditions that individuals regard as important determinants of their own personal lives" (Togari & Yonekura, 2015, p. 1).

"There is a large body of research reporting that personal mastery and related constructs of personal control are associated" (Roepke & Grant, 2011, p. 616) with health and well-being. These include "improved psychological (Mausbach, et al., 2006) and physical health outcomes (Matthews et al., 2006; Mausbach et al., 2007)…. reduced risk for mortality (Penninx, et al., 1997)….also buffer[ing] the impact that chronic stress can have on disease (Ma et al., 2007; Mausbach et al., 2007; Mausbach et al., 2008)" (Roepke & Grant, 2011, p. 616).

The applicability of the Pearlin Mastery Scale to cultural and linguistic setting other than North America and English has also been investigated. A small study conducted by Gordon et al. (2018) examined the structural validity of the Pearlin Mastery Scale when translated into Spanish and administered to Hispanic/Latinx patients from community clinics. The patients were diagnosed with ongoing health concerns, such as Type 2 diabetes, and were native Spanish speakers (Gordon et al., 2018). The study found that the Pearlin Mastery Scale, translated to Spanish, was no longer a reliable and valid measure although it is worth noting that the researchers make no mention of back-translation and did not use the full version of the scale, rather a shorter, five question version (Gordon et al., 2018). Similarly, in Togari and Yonekura's (2015) study, the Pearlin Mastery Scale was administered to 5,000 native Japanese men and women to test its validity and reliability in the Japanese language (Togari & Yonekura, 2015). The instrument was translated from English to Japanese and back-translated as a check for accuracy. The study found that the Pearlin Mastery Scale was a poor fit for Japanese (Togari & Yonekura, 2015). Eklund et al (2012) completed a similar process with regard to Swedes and Swedish with a sample of "330 healthy persons and 278 persons with mental illness" (p. 381) with mixed results. Part of the translated scale produced valid and reliable results and the remainder could be "corrected…by collapsing categories"

(p. 381). While it appears the Pearlin Mastery Scale is "not truly generic" (Eklund et al., 2012, p. 381), it is a valid and reliable instrument for English speaking populations in North America (Pearlin et al., 1981; US Bureau of Labor Statistics, n.d.).

Methodology

Data Gathering

The material presented was part of a larger study funded by the National Science Foundation. Four other journal articles (Preuss et al., 2020b; Preuss et al., 2020c; Preuss, et al., 2021; Ramos et al., 2021), a report for a regional non-profit (Preuss et al., 2019b), and seven conference presentations (Dorsett, 2018; Preuss et al., 2019a; Preuss et al., 2019c; Preuss et al., 2020a; Preuss & Sosa, 2019; Preuss & Sosa, 2020; Rodin, 2018) have been completed based on the findings. As that is the case, an abbreviated consideration of methodology will be presented here referencing the more detailed accounts already in print.

The results reported are from the data gathered for National Science Foundation Award # 1764268. The research methodology and materials were submitted for and received approval from an Institutional Review Board at a state university. The initial investigative activity was focus groups at the "Consejos Colectivos conference held in Dallas, Texas in late February of 2018" (Ramos et al., 2021, p. 5). Additional data in the initial stage was gathered following the conference as "targeted interviews with audiences under-represented or not included in the focus groups…[and] all session recordings were transcribed" (Ramos et al., 2021, p. 5). The authors of this article collaborated in "open qualitative coding (Kolb, 2012)" (Preuss et al., 2021, p. 292) of the focus group and interview transcripts. "The results of the coding, material from the literature, suggestions from conference team members, and the professional experience of the authors' were employed to create surveys that were distributed to 119 HSIs in a four-state region" (Preuss et al., 2021, p. 292). While the original plan had been surveying parties "at all HSIs in a seven-state region (AR, CO, KS, LA, NM, OK, TX)…it was discovered that there were no officially recognized HSIs in three of the states when distribution lists were prepared for the survey" (Ramos et al., 2021, p. 6). Thus, the survey was limited to institutions in "Colorado, Kansas, New Mexico, and Texas" (Preuss et al., 2021, p. 292).

The 2018 survey for students included "33 questions, many of which were multipart queries…[and] was distributed by sending e-mail announcements with an embedded link to over 1,500 faculty, staff, and administrators at the 119 HSIs in the four-state region. A similar e-mail was sent to 39 individuals who had volunteered at the Consejos Colectivos conference to assist with survey distribution. The Texas Association of Chicanos in Higher Education also distributed the survey link to their members" (Ramos et al., 2021, p. 6). This was an indirect means of contact as "the e-mail asked the recipient to share the survey link with students at their institution, should they be in direct contact with students, or with their colleagues who were in direct contact with students" (Preuss et al., 2021, p. 292). To aid in recruitment of participants, "members of the research team solicited participation in person at the dining commons and the student center food court of their institution, through their personal network of faculty contacts, and through college groups at churches" (Ramos et al., 2021, p. 6).

The 2018 survey remained open for submission of responses "for a three-week period from the end of April to the middle of May in 2018" (Ramos et al., 2021, p. 6). The survey was accessed by a "total of 585 students in three of the four states, Colorado, New Mexico and Texas….They attended 15 distinct colleges and universities, 'one university in Colorado, three four-year and two two-year institutions in New Mexico, and five four-year and four two-year institutions in Texas' (Preuss et al., 2020b, p. 62)" (Ramos et al., 2021, p. 6). Submissions were reviewed to see that they came from "a student from an HSI…[and for] completeness, and consistency" (Ramos et al., 2021, p.6).

Student self-reports of the institution they attended were "used to check that submissions came from students at HSIs. 'The limited number of responses from the university in Colorado were not included [for analysis] as it was not an HSI' (Preuss et al., 2020b, p. 62). This action and removing incomplete responses left a total of 464 usable response sets from students" (Ramos et al., 2021, p. 6) for the 2018 survey. "An additional student's responses were excluded for being inconsistent leaving a total of 463 respondents attending 14 HSIs in New Mexico and Texas" (Ramos et al., 2021, p. 6).

> In the spring of 2019, the research team revised the initial student survey. This involved removing some queries that had proven ineffective, adding a demographic marker, rephrasing some questions, shifting response patterns to 0 to 10 scales from select all that apply and five-point Likert scales, replacing the original familism and locus of

> control questions with valid and reliable question sets, and shifting the focus of a subset of questions from role models to mentors (Preuss et al., 2021, p. 293).

The updated survey was made available to students at four Hispanic-Serving Institutions in north Texas.

> It was first deployed at a community college in the spring of 2019. The research team solicited student participation by approaching students in the dining commons and the student center. Faculty members were also asked to present in their classes that students had the opportunity to participate in the survey. After initiating solicitation at the community college, respondents were also sought at a state university in the region using the same methods. Following that effort, the focus shifted to a second community college. The research team solicited participation by working with faculty who distributed the link to the survey in their classes or via e-mail (Preuss et al., 2021, p. 293).

Faculty members at a third community college were encouraged by their administration to "distribute the survey link to their students in class or via e-mail" (Preuss et al., 2021, p. 293). In every case, survey "solicitation processes were completed with the permission of the appropriate administrators" (Preuss et al., 2021, p. 293).

When students at all the institutions had been given opportunity to submit responses, 912 individuals "accessed the survey" (Ramos et al., 2021, p. 6) for 2019. Six were eliminated from the data set as they could not be verified as attending an HSI. "Eight more were students who identified themselves as attending an R01 institution in the region that became an HSI in 2017. The remaining…parties accessed the survey without completing it" (Preuss et al., 2021, p. 293). All these responses were "excluded from data analysis as they came from outside the population of interest and/or were without usable information" (Preuss et al., 2021, p. 293) resulting in "829 usable submissions from the four HSIs in north Texas, one regional, comprehensive state university and three community colleges" (Preuss et al., 2021, p. 293).

Data Analysis

Statistical analyses of responses for the 2018 queries addressing locus of control orientation were completed using SPSS. While it was possible to disaggregate submissions by "employment…types of work (i.e., on and off campus, part- and full-time)…hours worked

per week…gender, age, ethnicity, relationship status, and state" (Ramos et al., 2021, p. 6) for analysis, this report focuses on the influence of ethnic identity on responses to LOC and Pearlin Mastery Scale questions. Detailed accounting of differences found for a wide variety of topic areas and based on other factors can be found in Preuss et al (2020a and 2020b), Ramos et al. (2021), and Preuss et al. (2021). Mann Whitney U tests were completed with the locus of control responses in the 2018 response set.

Pearlin Mastery Scale responses must be manipulated to produce a composite score (Pearlin & Schooler, 1978; U.S. Bureau of Labor Statistics, n.d.). This involves reversing several of submitted ratings (Science of Behavior Change, n.d.; U.S. Bureau of Labor Statistics, n.d.). After completing that process, regression analysis was performed with the following factors considered as variables: (1) gender, (2) ethnicity, (3) age, (4) standing as a first-generation college student, (5) type of institution attended (two-year or four-year), (6) number of credit hours earned, (7) years of college completed, (8) employment status (employed versus unemployed), and (9) level of employment (part-time or full-time).

Limitations

Limitations exist for the information being reported. The survey prompts employed for locus of control measures in the 2018 instrument "were developed by the project team and while they were reviewed for face validity by Hispanic/Latinx and non-Hispanic students and higher education professions and were piloted with a group of students, they cannot be seen as having demonstrated validity and reliability" (Preuss et al., 2021, p. 294).

The data was submitted as self-reports. While the questions requested information about the informant and his/her background, experiences, and opinions, there was no means of checking the accuracy of the submissions. "Because the responses were submitted anonymously and none of the information requested is generally considered to be of a sensitive nature, it is possible but unlikely informants felt a need to shield themselves by providing inaccurate information" (Ramos et al., 2021, p. 7).

The findings are descriptive. The focus of the queries in the two question sets considered was student opinion rather than why the opinion was held. "Informants were not asked whether

they were attending college part-time or full-time" (Ramos et al., 2021, p. 7) on the 2018 survey which would have made one addition form of analysis possible.

Gordon et al.'s study indicates that translating the Pearlin Mastery Scale to Spanish results in an instrument that is not reliable. In the authors' investigation, the percentage of informants who have Spanish as their first language is known, 17.8%, but the impact of taking a survey written in your second language that appears to include linguistic/cultural constructs that do not consistently translate to the informant's first language (Eklund et al., 2012; Gordon et al., 2018; Togari & Yonekura, 2015) is unknown. Thus, it must be allowed that linguistic/cultural influences may have impacted responses on the Pearlin Mastery Scale for at least some of the Hispanic/Latinx informants in 2019.

Results

Survey Informant Demographics

The demographics for respondents to the 2018 survey aligned well with the student populations of the institutions they attended (Ramos, et al., 2021). Gender distribution was similar; 61.0% of the sample identified as female, 38.1% male, 0.5% nonbinary (0.5% did not submit a response) while 59.4% of the student population of the 14 institutions identified as female and 40.6% as male. The survey sample included a slightly higher percentage of Hispanic/Latinx individuals than the overall student population, 45.9% to 41.7%, and African Americans were undersampled while Whites were slightly over-represented (Ramos et al., 2021). Traditional aged college students made up 84.1% of the 2018 sample though this could not be compared to the population as many of the colleges and universities did not report student age in their institutional student profiles. With a total population calculated at 172,271 the "usable responses exceed the threshold…for a 95% level of confidence with a 5%" (Preuss et al., 2021) interval (i.e., 4.54% interval at the 95% level of confidence).

The estimated student population for the four institutions included in the 2019 survey was "28,259. The 829 usable responses received" (Preuss et al., 2021, p. 295) have a 4.41% confidence interval at the 99% level of confidence. Like for the 2018 survey, it was possible to check the gender, ethnicity, and racial distribution of the sample. Persons identifying as female were 61.0% of the sample and 58.8% of the student population, male 37.7% and 41.2% (Preuss et al., 2021). Hispanic/Latinx parties were 40.4% of the 2019 sample and

34.2% of the student population. The racial distribution was similar in all categories and 83.7% of the students were traditional age for college, 18 to 24 years of age. In both cases, the sample was an appropriate approximation of the student population. The samples were also large enough that the results can be treated with a minimum 95% level of confidence.

LOC Orientation

Four questions related to LOC, all created by the project team, were included in the 2018 survey (Table 1). Three addressed internal locus of control and one focused on external locus of control. Prior to being deployed, the questions were piloted with a group of undergraduate students (n = 9) and assessed as having face validity by faculty representatives of the Texas Association of Chicanos in Higher Education. Responses were submitted using a traditional five-point Likert scale that extended from Strongly Disagree to Strongly Agree. The Mann-Whitney U test was employed for analysis. For each of the four questions there were statistically significant differences between responses received from Hispanic/Latinx informants and their non-Hispanic peers.

Table 1. Results of Statistical Analysis for Locus of Control Questions

Prompt	MR Hisp	MR non-Hisp	p value
I feel confident I can achieve my goals in college.	223.19	185.13	< .001
If I work hard, I can reach my goals in college.	221.14	186.15	< .001
I am in control of my own success.	225.86	182.63	< .001
There are obstacles to my success that are outside my control.	216.16	191.57	= .027

Note: Mean rank is abbreviated MR.

Studies published in the health and wellness field (Bollini et al., 2004; Champagne et al., 2016; Jardin et al., 2017; Ruiz et al., 2018) suggest Hispanic/Latinx students would score low on constructs related to internal LOC and high on constructs related to external LOC. However, the students identifying as Hispanic/Latinx, 45.9% of the sample, scored higher than their non-Hispanic peers at statistically significant levels on measures of internal as well as external locus of control.

Pearlin Mastery Scale Findings

Regression analysis completed with the Pearlin Mastery Scale composite scores returned no significant results. The variables considered, as noted above, were student: (1) gender, (2) ethnicity, (3) age, (4) standing as a first-generation college student, (5) type of institution attended (two-year or four-year), (6) number of credit hours earned, (7) years of college completed, (8) employment status (employed versus unemployed), and (9) level of employment (part-time or full-time).

The sample was entirely students enrolled in higher education at HSIs in north Texas. While 40.4% of them identified as Hispanic/Latinx and 17.8% had Spanish as their first language (Preuss et al., 2021), these were persons attending institutions who draw a student population from the region, predominantly Texas, then for the four-year institution to a much smaller degree from New Mexico, Oklahoma, and Kansas, with a limited number of persons from outside that area. The students' backgrounds would, as a result, include extensive background in English-language-based educational settings and substantial experience with American cultural. They were, in fact, sufficiently confident in their skills in English to enroll in college courses taught entirely in that language. These factors, even with an audience of mixed ethnic identity and 17.8% second language speakers of English, suggest that the Pearlin Mastery Scale would return valid and reliable results since it was being deployed in the language and culture in which it was developed (Pearlin et al., 1981). The absence of significant differences can, then, be interpreted in respect to level of mastery. There was no assessed subset of the sample that exhibited consistently higher "levels of mastery [indicating more] trust that they are able to adapt their behaviours…or their circumstances…to reach their important goals" (Clench-Aas et al., 2016, pp. 127-128) than their peers when controlling for all other variables. In fact, the adjusted R^2 value indicated that the model explained little of the variance present in the group, only one-half of one percent. This is an important finding should other studies confirm it. That Hispanic/Latinx students did not exhibit significantly different levels of mastery in comparison to their non-Hispanic peers validates acting on a basic assumption in American higher education, that students believe they have the ability to influence their behavior and circumstances, in instruction and support programming at the more than 120 Hispanic-Serving Institutions in NM, KS, and TX and the 320+ in the southwest United States.

Conclusion

To the best of the authors' knowledge, both data sets discussed are the first of their kind in the breadth of topics addressed specific to students attending HSIs. Thus, conclusions and applications based on the findings must be seen as tentative. It is also important to note that the findings come from a region in which Mexican cultural heritage is the predominant form of Hispanic/Latinx culture (Preuss, et al., 2019b; Preuss et al., 2021) and application of findings in setting with broader diversity in Hispanic cultures may be limited. However, two large samples of students from HSIs returned important findings that align with the cultural milieu of the region and that are mutually supportive. That Hispanic/Latinx students had significantly higher external locus of control than non-Hispanics is what would be expected for members of a collectivist culture (Ojeda et al., 2014; Ruiz, 2005; Ruiz et al., 2018). That they would also have a significantly higher internal locus of control, "the degree to which one attributes reinforcement as being contingent upon one's own behaviors versus a result of environmental forces out of one's control" (Roepke & Grant, 2011, p. 3), aligns with Mexican-American cultural heritage, the predominant Hispanic/Latinx culture in the region, in respect to the emphasis on hard work (Aoki, 2010; Duda, 1985; Luzzo, 1997; Preuss et al., 2019a; Preuss et al., 2019b) and confidence in one's ability to succeed (Arellano & Padilla, 1996; Knight et al., 2010; Preuss et al., 2019a; Preuss et al., 2019b). The finding that students at HSIs who identify as Hispanic exhibited no significant difference from their non-Hispanic peers in respect to mastery supports the above as persons with higher levels of mastery "may appraise themselves as capable of coping with or controlling problems in life" (Roepke & Grant, 2011, p. 616) trusting "that they are able to adapt their behaviours, or their circumstances, to reach their important goals" (Clench-Aas et al., 2016, pp. 127-128). Thus, though these findings need to be confirmed by further investigation, they are consistent with each other. That they resulted from two different but large samples in the same region of the United States one year apart supports their being trustworthy, although for regions with greater variety in Hispanic/Latinx culture, the findings may be less applicable.

Individuals from underrepresented groups in the US have faced increased difficulty succeeding in the higher education system than Whites (Chun et al., 2016; Zepke & Leach, 2005) including Hispanic/Latinx students, especially those who are first- or second-generation students (Garcia, 2010; Pascarella et al., 2004). Understanding cultural norms and values of these persons and groups is pivotal in the promotion of their success in higher

education (Batista et al., 2019; Chun & Evans, 2016; Chun et al., 2016). Understanding aspects of Hispanic culture, such as collectivism, familism, respeto and how they relate to sense of identity, perspectives, and behavior, can facilitate implementation of affirming and culturally responsive programming (Aguilar, 2019; Chun & Evans, 2016; Hutchinson & McAlister-Shields, 2020; Larke, 2013; Wlodowski & Ginsberg, 1995) that can support broader academic success and retention for students identifying as Hispanic/Latinx (Kang et al., 2013; Karaman et al., 2018; Hrbáčková et al., 2012) as well as supporting the health and wellness benefits associated with LOC for them (Bollini et al., 2004; Karaman et al., 2018; Szabo, Chang, & Chancellor-Freeland, 2015; Valentine et al., 2008).

Future Directions

The study results reported are encouraging but require further verification. Additional studies must be completed to confirm the findings, especially those related to LOC for which the questions asked had only face validity and might not be reliable. Confirmation would facilitate application of relatively simple psychological constructs in support of Hispanic/Latinx student success as well as potentially advancing health and wellness benefits associated with internal LOC orientation (Bollini et al., 2004; Karaman et al., 2018; Szabo et al., 2015; Valentine et al., 2008) for them at HSIs and other institutions of higher education across the United States.

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References

Abascal, M. (2015). Us and them: Black-White relations in the wake of Hispanic population growth. *American Sociological Review*, 80(4), 789-813.

Adwere-Boamah, J. (2015). Equity of access to higher education: An uncheerful prospect. *Journal of the World Universities Forum, 8*(4), 19-26. DOI: 10.18848/1835-

2030/CGP/v08i04/56875

Aguilar, R. M. (2019). *Culturally responsive pedagogy and Latinx educators in higher education: A case study* (Publication no. 27545704) [Doctoral dissertation, Texas A&M University – Corpus Christi]. ProQuest Dissertations & Theses Global.

Aoki, E. (2010). Mexican American ethnicity in Biola, CA: an ethnographic account of hard work, family, and religion. *Howard Journal of Communications, 11*(3), 207-227.

Arrellano, A. R. & Padilla, A. M. (1996). Academic invulnerability among a select group of Latino university students. *Hispanic Journal of Behavioral Sciences, 18*(4), 485-507. https://doi.org/10.1177/07399863960184004

Batista, A., Collado, S. M. & Perez II, D. *Latinx/a/os in higher education: Exploring identity, pathways, and success.* Washington, DC: National Association of Student Personnel Administrators.

Bollini, Walker, Hamann, & Kestler. (2004). The influence of perceived control and locus of control on the cortisol and subjective responses to stress. *Biological Psychology*, 67(3), 245-260.

Brooks, K., & Winchell, D. (2015). Hispanic population in Washington state: Demographic change and spatial clustering. *Papers in Applied Geography*, 1(2), 1-8.

Calzada, E., Fernandez, Y., & Cortes, D. (2010). Incorporating the cultural value of respeto into a framework of Latino parenting. *Cultural Diversity & Ethnic Minority Psychology*, 16(1), 77-86.

Calzada, Esther J., Tamis-LeMonda, Catherine S., & Yoshikawa, Hirokazu. (2013). Familismo in Mexican and Dominican families from low-income, urban communities. *Journal of Family Issues*, 34(12), 1696-1724.

Champagne, B., Fox, R., Mills, S., Sadler, G., & Malcarne, V. (2016). Multidimensional profiles of health locus of control in Hispanic Americans. *Journal of Health Psychology*, 21(10), 2376-2385.

Cheng, C., Cheung, S., Chio, J., & Chan, M. (2013). Cultural meaning of perceived control: A meta-analysis of locus of control and psychological symptoms across 18 cultural regions. *Psychological Bulletin*, 139(1), 152-188.

Cheong, P. H. (2006). Communication context, social cohesion, and social capital building among Hispanic immigrant families. *Community, Work and Family*, 9(3), 367-387, DOI: 10.1080/13668800600743495

Chun, E. & Evans, A. (2016). Rethinking cultural competence in higher education: an ecological framework for student development. Hoboken, NJ: John Wiley & Sons.

Chun, H., Marin, R., Schwartz, J., Pham, A., & Castro-Olivo, S. (2016). Psychosociocultural structural model of college success among Latina/o students in Hispanic-serving institutions. *Journal of Diversity in Higher Education*, 9(4), 385-400.

Clench-Aas, J., Nes, R. B. & Aaro, L. E. (2017). The perceived constraints subscale of the Sense of Mastery Scale: Dimensionality and measurement invariance. *Quality of Life Research Journal, 26,* 127-138. DOI: 10.1007/s11136-016-1359-6

Dorsett, C. (2018, November 1-2). *Locus of control among undergraduate students at Hispanic-serving institutions* [Conference presentation]. 15th Annual Pathways Student Research Symposium. West Texas A&M University, Canyon, TX, United States.

Duda, J. L. (1985). Goals and achievement orientations of Anglo and Mexican-American adolescents in sport and the classroom. *International Journal of Intercultural Relations, 9,* 131-150.

Eklund, M., Erlandsson, L. K., Reg, O. T. & Hagell, P. (2012). Psychomteric properties of a Swedish version of the Pearlin Mastery Scale in people with mental illness and healthy people. *Nordic Journal of Psychiatry, 66*(6), 380-388. https://doi.org/10.3109/08039488.2012.656701

Erlach, D. (2000). Hispanics and higher education: Multicultural myopia. *Journal of Education for Business*, 75(5), 283-285.

Espinosa-Hernández, G., Bissell-Havran, J., Van Duzor, A., & Halgunseth, L. (2017). Romantic relationships in Mexico: Understanding the role of parenting and respeto in adolescence. *Journal of Social and Personal Relationships*, 34(7), 1070-1079.

Excelencia in Education. (2020). *Latino college completion: United States.* https://www.edexcelencia.org/sites/default/files/LCCStateStats/Exc-2020-50StateFS-USA-05.pdf [Retrieved July 1, 2021]

Flores, S. & Park, T. (2015). The effect of enrolling in a minority-serving institution for Black and Hispanic students in Texas. *Research in Higher Education*, 56(3), 247-276.

Garcia, M. (2010). When Hispanic students attempt to succeed in college, but do not. *Community College Journal of Research and Practice, 34*(10), 839-847. https://doi.org/10.1080/10668926.2010.485003

Goodman, J., Heddy, B. J. & Cavazos, J. (2020). First-generation college students' academic challenges understood through the lens of Expectancy Value Theory in an introductory psychology course. *Teaching of Psychology*, 1-12.

Gordon, J. R., Malcarne, V. L., Roesch, S. C., Roetzheim, R. G., & Wells, K. J. (2018). Structural validity and measurement invariance of the Pearlin Mastery Scale in

Spanish-speaking primary care patients. *Evaluation & the Health Professions*, 41(3), 393–399. https://doi.org/10.1177/0163278718774942

Gramlich, J. (2017). Hispanic dropout rate hits new low, college enrollment at new high. Retrieved from: http://www.pewresearch.org/fact-tank/2017/09/29/hispanic-dropout-rate-hits-new-low-college-enrollment-at-new-high/

Green, S. L. & Wright, C. F. (2017). Retaining first generation underrepresented minority students: A struggle for higher education. *Journal of Education Research, 11*(3), 323-338.

Hofstede, G., Van Hofstede, G. & Minkov, M. (2010). Cultures and organizations: Softwares of the mind. New York, NY: McGraw Hill Publishing.

Hrbáčková, Hladík, & Vávrová. (2012). The relationship between locus of control, metacognition, and academic success. *Procedia - Social and Behavioral Sciences*, 69(C), 1805-1811.

Hurtado, S., Ramirez, J., & Cho, K. (2018). The current Latinx/a/o landscape of enrollment and success in higher education. In Batista, A. E., Collado, S. M. & Perez II, D. (Eds.). Latinx/a/os in higher education: Exploring identity, pathways, and success. Washington, DC: NASPA – National Association of Student Personnel Administrators.

Hutchinson, L. & McAlister-Shields, L. (2020). Culturally responsive teaching: Its application in higher education environments. *Education Sciences, 10*(5), 124-130. https://doi.org/10.3390/educsci10050124

Jardin, C., Mayorga, N., Bakhshaie, J., Garey, L., Viana, A., Sharp, C., . . . Zvolensky, M. (2017). Clarifying the relation of acculturative stress and anxiety/depressive symptoms: The role of anxiety sensitivity among Hispanic college students. *Cultural Diversity & Ethnic Minority Psychology*, 24(2), 221.

Kang, H., Chang, K., Chen, C., & Greenberger, E. (2013). Locus of control and peer relationships among Caucasian, Hispanic, Asian, and African American adolescents. 184-194.

Karaman, & Watson. (2017). Examining associations among achievement motivation, locus of control, academic stress, and life satisfaction: A comparison of U.S. and international undergraduate students. *Personality and Individual Differences*, 111, 106-110.

Karaman, M., Nelson, K., & Cavazos Vela, J. (2018). The mediation effects of achievement motivation and locus of control between academic stress and life satisfaction in undergraduate students. *British Journal of Guidance & Counselling*, 46(4), 375-384.

Katrevich, A. V. & Aruguete, M. S. (2017). Recognizing challenges and predicting success in first-generation university students. *Journal of STEM Education, 18*(2), 40-44.

Kilen, M. (September 21, 2017). Can Iowa's rising Latino population save some of its dying towns? https://www.desmoinesregister.com/story/news/2017/09/21/latino-population-denison-may-foretell-iowas-future/647264001/ [Retrieved June 30, 2021]

Knight, P. K., Gonzalez, N. A., Saenz, D. S., Bonds, D. D., German, M., Deardorff, J., Roosav, M. W. & Updegraff, K. A. (2010). The Mexican American Cultural Values Scale for adolescents and adults. *Journal of Early Adolescence, 33*(3), 444-481.

Knight, P. K., Mazza, G. L. & Carlo, G. (2018). Trajectories of familism values and prosocial tendencies of Mexican American adolescents. *Developmental Psychology, 54*(2), 378-38.

Kolb, S.M. (2012). Grounded theory and the constant comparative method: Valid research strategies for educators. *Journal of Emerging Trends in Educational Research and Policy Studies*, *3*(1), 83-86.

Kolmar, C. (December 29, 2020). The 10 Nebraska cities with the largest Latino population for 2021. https://www.homesnacks.com/most-hispanic-cities-in-nebraska/ [Retrieved June 30, 2021].

Kouyoumdjian, C., Guzmán, B., Garcia, N., & Talavera-Bustillos, V. (2017). A community cultural wealth examination of sources of support and challenges among Latino first- and second-generation college students at a Hispanic serving institution. *Journal of Hispanic Higher Education*, 16(1), 61-76.

Larke, P. (2013). Culturally responsive teaching in higher education: What professors need to know. *Counterpoints, 391,* 38-50.

Latino, C. A., Stegmann, G., Radunzel, J., Way, J. D., Sanchez, E. & Casillas, A. (2020). Reducing gaps in first-year outcomes between Hispanic first-generation college students and their peers: The role of accelerated learning and financial aid. *Journal of College Student Retention: Research, Theory & Practice*, 22(3), 441-463.

Lin, K., & Huang, K. (2014). Moral judgment and ethical leadership in Chinese management: The role of Confucianism and collectivism. Quality & Quantity, 48(1), 37-47.Lorenzo-Blanco, E. I., Unger, J. B., Baezconde-Garbanati, L., Ritt-Olson, A. & Soto, D. (2012). Acculturation, enculturation, and symptoms of depression in Hispanic youth; the roles of gender, Hispanic cultural values, and family functioning. *Journal of Youth and Adolescence, 41*(10), 1350-1365.

Lotkowski, V. A., Robbins, S. B. & Noeth, R. J. (2004). The role of academic and non-

academic factors in improving college retention. ACT policy report. Iowa City, IA: American College Testing Inc. ERIC ref. # ED485476

Luzzo, D. A. (1997). Correlates of Mexican American college students' perceptions of career related barriers. Paper presented at the Annual Meeting of the American Psychological Association (Chicago, IL, August 1997).

Martinez, J. A., Sher, K. J., Krull, J. L. & Wood, P. K. (2009). Blue-collar scholars?: Mediators and moderators of university attrition in first-generation college students. *Journal of College Student Development*, 50(1), 87–103. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2742431/ [Retrieved July 2, 2021]

McCarty, J. A., & Shrum, L. J. (2001). The influence of individualism, collectivism, and locus of control on environmental beliefs and behavior. *Journal of Public Policy & Marketing*, 20(1), 93–104.

Miller, S. (2013). Living in two worlds: Torn identities and gender expectations of Latinas in the United States. *UC Merced Undergraduate Research Journal*. https://doi.org/10.5070/M451020764

Mueller, S. L. & Thomas, A. S. (2001). Culture and entrepreneurial potential: A nine country study of locus of control and innovativeness. *Journal of Business Venturing*, 16(1), 51-75.

National Center for Education Statistics. (2017). *The condition of education 2017. Chapter: 4/postsecondary education section: Characteristics of postsecondary students.* Washington, D.C.: U. S. Department of Education.

National Center for Education Statistics. (2020). *The condition of education 2020. Chapter: 2/postsecondary education; Section: Postsecondary students.* Washington, D.C.: U. S. Department of Education. https://nces.ed.gov/programs/coe/pdf/coe_cpb.pdf

National Science Board. (2020). *Science and engineering indicators: State of US S&E 2020.* https://ncses.nsf.gov/pubs/nsb20201/u-s-s-e-workforce#women-and-underrepresented-minorities

Ojeda, L., Edwards, L. M., Hardin, E. E. & Pina-Watson, B. (2014). The role of behavioral and cognitive cultural orientation on Mexican American college students' life satisfaction. *Journal of Hispanic Higher Education, 13*(1), 63-74.

Pappamihiel, N. E. & Moreno, M. (2011). Retaining Latino students: Culturally responsive instruction in colleges and universities. *Journal of Hispanic Higher Education, 10*(4), 331-344. https://doi.org/10.1177/1538192711410602

Pearlin, L. I., & Schooler, C. (1978). The structure of coping. *Journal of Health and Social*

Behavior, 19(1), 2-21.

Pearlin, L. I., Menaghan, E. G., Liebrman, M. A. & Mulan, J. T. (1981). The stress process. *Journal of Health and Social Behavior, 22*(4), 337-356. https://www.jstor.org/stable/2136676

Postsecondary National Policy Institute. (2021). Factsheets: Latino students. https://pnpi.org/latino-students/

Preuss, M. & Sosa, E. (2019, February 17-20). *HSIs in the south-central US: Their nature, variety, and characteristics* [Conference presentation]. 44th Annual Texas Association of Chicanos in Higher Education Conference, Austin, TX, United States.

Preuss, M. & Sosa, E. (2020, February 19-22). *Students at HSIs in Texas and New Mexico: An in-depth profile of their backgrounds, commitments, and perspectives* [Conference presentation]. 45th Annual Texas Association of Chicanos in Higher Education Conference, Sugar Land, TX, United States.

Preuss, M. D., Rodin, J. C., Sosa, E. M., Ramos, J. D., Dorsett, C. R. & Burleson, C. R. (2019). Hispanic-Serving Institutions in the South-Central United States: A Research Report for Los Barrios de Amarillo. Canyon, TX: West Texas Office of Evaluation and Research.

Preuss, M. D., Sosa, E. M., Rodin, J. C., Dorsett, C. R., Ramos, J. D., & Burleson, C. R. (2021). Students at Hispanic-Serving Institutions (HSI) in Texas and New Mexico: An in-depth profile of their backgrounds, commitments, and perspectives. *International Journal of Research in Education and Science (IJRES), 7*(2), 287-326. https://doi.org/10.46328/ijres.1984

Preuss, M. D., Sosa, E. M., Rodin, J. C., Ramos, J. D., Dorsett, C. R. & Burleson, C. R. (2020). Competence of faculty, staff, and administrators in Hispanic culture: evidence from three surveys of personnel and students at Hispanic-Serving Institutions. *International Journal of Research in Education and Science. 6*(2), 202-230.

Preuss, M., Rodin, J., Sosa, E., Ramos, J., Dorsett, C. & Burleson, C. (2019, October 7-10). *Competency of faculty, staff, and administrators in Hispanic culture: Evidence from three surveys of personnel and students at Hispanic-Serving Institutions* [Conference presentation]. International Conference on Social and Education Sciences, Denver, Colorado, United States.

Preuss, M., Sosa, E., Rodin, J., Dorsett, C., Ramos, J. & Burleson, C. (2020, October 15-20). *Students at HSIs in Texas and New Mexico: An in-depth profile of their backgrounds, commitments, and perspectives* [Conference presentation]. International Conference on

Social and Education Sciences, Chicago, Illinois, United States.

Preuss, M., Sosa, E., Rodin, J., Ramos, J., Dorsett, C. & Burleson, C. (2019, October 7-10). *Role models and mentoring relationships: Preferences expressed by Hispanic students attending Hispanic-Serving Institutions* [Conference presentation]. International Conference on Social and Education Sciences, Denver, Colorado, United States.

Preuss, M., Sosa, E., Rodin, J., Ramos, J., Dorsett, C. & Burleson, C. (2020). Role models and mentoring relationships: Preferences expressed by Hispanic students attending Hispanic-Serving Institutions. *International Journal on Social and Education Sciences, 2*(2), 57-74. https://www.ijonses.net/index.php/ijonses/article/view/35

Pyne, K. B. & Means, D. R. (2013). Underrepresented and in/visible: A Hispanic first-generation student's narratives of college. *Journal of Diversity in Higher Education, 6*(3), 186–198. https://doi.org/10.1037/a0034115

Ramos, J., Rodin, J., Preuss, M., Sosa, E., Dorsett, C., & Burleson, C. (2021). Work patterns and financing college: A descriptive regional report regarding students at Hispanic-Serving Institutions in New Mexico and Texas. *International Journal on Social and Education Sciences, 3*(1), 1-31. https://doi.org/10.46328/ijonses.60

Reyes, N. A. S. & Nora, A. (2012). Lost among the data: A review of Latino first generation college students. Washington, DC: Hispanic Association of Colleges and Universities.

Roddenberry, A., & Renk, K. (2010). Locus of control and self-efficacy: Potential mediators of stress, illness, and utilization of health services in college students. *Child Psychiatry and Human Development*, 41(4), 353-370.

Rodin, J. C. (2018, November 1-2). *Self-reported familial support and expectations amongst students at Hispanic-Serving Institutions* [Conference presentation]. 15th Annual Pathways Student Research Symposium. West Texas A&M University, Canyon, TX, United States.

Rodríguez Amaya, L., Betancourt, T., Collins, K. H., Hinojosa, O., & Corona, C. (2018). Undergraduate research experiences: mentoring, awareness, and perceptions—a case study at a Hispanic-Serving Institution. *IJ STEM Ed*, 5(9). https://doi.org/10.1186/s40594-018-0105-8

Roepke, S. K. & Grant, I. (2011). Toward a more complete understanding of the effects of personal mastery on cardiometabolic health. *Health Psychology, 30*(5), 615-632. DOI:10.1037/a0023480

Rotter, J. (1966). Generalised expectancies for internal versus external locus of control of reinforcement. *Psychological Monographs*, 80(609), 1–28.

Ruiz, E. (2005). Hispanic culture and relational cultural theory. *Journal of Creativity in Mental Health, 1*(1), 33-55.

Ruiz, Sbarra, & Steffen. (2018). Hispanic ethnicity, stress psychophysiology and paradoxical health outcomes: A review with conceptual considerations and a call for research. *International Journal of Psychophysiology*, 131, 24-29

Science of Behavior Change. (n.d.). *Pearlin Mastery Scale*. https://scienceofbehaviorchange.org/measures/pearlin-mastery-scale/

Smith, P. B., Trompenaars, F. & Dugan, S. (2007). The Rotter locus of control scale in 43 countries: A test of cultural relativity. *International Journal of Psychology*, 30(3), 377-400.

Smith-Morris, C., Morales-Campos, D., Alvarez, E., Castaneda, A., & Turner, M. (2013). An anthropology of "Familismo": On narratives and description of mexican/immigrants. *Hispanic Journal of Behavioral Sciences*, 35(1), 35-60.

Spector, P. E., Cooper, C. L., O'Driscoll, M., Sparks, K., Bernin, P., Büssing, A., Dewe, P., Hart, P., Lu, L., Miller, K., de Moraes, L. F. R., Ostrognay, G. M., Pagon, M., Pitariu, H., Poelmans, S., Radhakrishnan, P., Russinova, V., Salamatov, V., Salgado, J.,…Yu, S. (2001). Do national levels of individualism and internal locus of control relate to well-being: An ecological level international study. *Journal of Organizational Behavior*, 22, 815-832.

Steidel, A. G. L. & Contreras, J. M. (2003). A new familism scale for use with Latino populations. *Hispanic Journal of Behavioral Sciences*, 25(3), 312-330.

Stein, G. L., Cupito, A. M., Mendez, J. L., Prandoni, J., Huq, N. & Westerberg, D. (2014). Familism through a developmental lens. *Journal of Latina/o Psychology*, 2(4), 224-250.

Stephens, N. M., Markus, H. R., Fryberg, S. A., Johnson, C. S. & Covarrubias, R. (2012). Unseen disadvantage: How American universities' focus on independence undermines the academic performance of first-generation college students. Journal of Personality and Social Psychology, 102(6), 1178-1197.

Suizzo, M. & Soon, K. (2006). Parental academic socialization: Effects of home-based parental involvement on locus of control across U.S. ethnic groups. *Educational Psychology*, 26(6), 827-846.

Szabo, Yvette Z., Chang, Andrew, & Chancellor-Freeland, Cheryl. (2015). Locus of control predicts cortisol reactivity and speech performance in response to acute stress in undergraduate students. *College Student Journal*, 49(2), 225-236.

Terenzini, P. T., Springer, L., Yaeger, P. M., Pascarella, E. T., & Nora, A. (1996). First-

generation college students: Characteristics, experiences, and cognitive development. *Research in Higher Education*, 37, 1-22. https://doi.org/10.1007/BF01680039

Togari, T., & Yonekura, Y. (2015). A Japanese version of the Pearlin and Schooler's Sense of Mastery Scale. SpringerPlus, 4(1), 1–4. https://doi.org/10.1186/s40064-015-1186-1

Trevino, B., & Ernst, F. A. (2012). Skin tone, racism, locus of control, hostility, and blood pressure in Hispanic college students. *Hispanic Journal of Behavioral Sciences*, 34(2), 340-348.

U.S. Bureau of Labor Statistics. (n.d.). *National longitudinal surveys: NLSY79 appendix 21: Attitudinal scales.* https://www.nlsinfo.org/content/cohorts/nlsy79/other-documentation/codebook-supplement/nlsy79-appendix-21-attitudinal-scales#pearlin

U.S. Census Bureau, 2016. Quick Facts, American Community Survey. Retrieved from: https://www.census.gov/quickfacts/fact/table/US/PST045216.

U.S. Census Bureau. (2021). *QuickFacts: United States*. https://www.census.gov/quickfacts/fact/table/US/PST045219 [Retrieved July 2, 2021]

U.S. Department of Health, Education, and Welfare, Office of Education. (1965). *Higher education act of 1965 section-by-section analysis.* Washington, DC: U.S. Department of Health, Education, and Welfare, Office of Education.

Valentine, S. R., Godkin, J., & Doughty, G. P. (2008). Hispanics' locus of control, acculturation, and wellness attitudes. *Social Work in Public Health*, 23(5), 73–92. https://doi.org/10.1080/19371910802053257

Ward, L., Siegel, M. J. & Davenport, Z. (2012). First-generation college students: Understanding and improving the experience from recruitment to commencement. Hoboken, NJ: Jossey-Bass.

Whittaker, J. A. & Montgomery, B. L. (2012). Cultivating diversity and competency in STEM: Challenges and remedies for removing virtual barriers to constructing diverse higher education communities of success. *Journal of Undergraduate Neuroscience Education, 11*(1), A44-A51. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3592737/

Wlodowski, R. J. & Ginsberg, M. B. (1995). Diversity and motivation: Culturally responsive teaching. San Francisco, CA: Jossey Banks.

Woosley, S. A. & Shepler, D. K. (2011). Understanding the early integration experiences of first-generation college students. *College Student Journal*, 45(4), 700-714.

York-Anderson, D. C., & Bowman, S. L. (1991). Assessing the college knowledge of first-generation and second-generation college students. *Journal of College Student Development, 32*(2), 116–122.

Zepke, N. & Leach, L. (2005). Integration and adaptation: Approaches to the student retention and achievement puzzle. *Active Learning in Higher Education, 6*(1), 46-59. https://doi.org/10.1177/1469787405049946

Zhan, M. & Xiang, X. (2018). Education loans and asset building among black and Hispanic young adults. *Children and Youth Services Review*, 121-127.

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Chapter 2 - Relationship between the Learning Organization and Organizational Agility

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Chapter Highlights

- The purpose of this research is to analyze the relationship between learning organization and organizational agility, how being a learning organization affects organizations in achieving organizational agility and determining how important learning is still a dynamic for unlimited competition by identifying the relationship between them.
- The data have been obtained from authorized employees of a corporate firm, which has been providing stores and franchise services in 47 different countries for 33 years in the textile sector with retail merchandising service and has a strong competitive power in its sector.
- Learning organization questionnaire by the authors of Marsick & Watkins (2003) and organizational agility questionnaire of the authors of Sharifi & Zhang (1999) were applied.
- The number of 394 surveys was reached between the relevant dates through the online survey form.
- Within the scope of the research, the relationship between the seven sub-dimensions in the learning organization scale and the four sub-dimensions in the organizational agility scale was examined.
- Research hypotheses were tested with Pearson correlation analysis and a significant relationship was found between learning organizational structure and organizational agility.

Introduction

The environmental factor having a great impact on organizations, is gradually becoming more variable and uncertain. For organizations to keep up with a dynamic environment, organizational structures must also be dynamic. If a business wants to be able to compete, gain superiority, and thus continue its life, it must be a learning organization that has an important place in adapting to the environment. Thus, the learning organization can have organizational agility. Thanks to organizational agility, it will be able to respond to changes in the environment both effectively and efficiently.

The companies of the future are ultra-innovative and creative. Knowledge will soon become the only competitive advantage. Therefore, companies that can learn and adapt quickly will survive (Thoren, 2020: 47). To compete in a changing environment with increasing diversity and dynamic elements, both business strategies and ideas about organizations need to be updated. Being able to make a successful update is about being a learning and agile organization. Because of this importance, it can be said that organizational agility attracts more attention and importance in each business unit of enterprises.

Agility is basically a simple and practical approach to innovation that every manager can master and enjoy (Rigby, 2020: 11). Agility is important for success as environmental conditions become increasingly volatile for firms across industries (Overby, et. al., 2006: 125). Agility can be recognized as an organization's ability to develop in an ever-changing, unpredictable business environment. If an organization is defined within the scope of competence to apply information effectively, it can be said that it can effectively manage and implement information (Dove, 1999: 19).

The only way to adapt is to learn. The problem or challenge in an agile or organic system will be how to direct learning to a valuable place, or how to create inter-organizational corporate learning by crossing boundaries such as location (Thoren, 2020: 126). Change and uncertainty, which are significant in modern market conditions, should also be dealt with strategies such as agility to facilitate the maintenance of businesses' profit ability and the increase of dividends (Qin & Nembhard, 2010: 332). It would not be right to incorporate or compress the agility element into a single business unit of an organization. In dealing with the organization, agility should also be taken in parallel. That is, it can be said that agility should

be strategic. Agility is the ability to detect changes and respond by providing the necessary capabilities. To achieve competitiveness, businesses need to become agile. Because it should be able to recognize perceived threats and opportunities in the environment and give the necessary answers (Sharifi & Zhang, 1999: 21). Organizations can increase their agility through learning (Arun, et. al., 2012).

Organizations should invest in continuing education programs to maintain their agility. Such an investment will allow individuals within the organization to become agile, that is, agile individuals. Agile employees, on the other hand, will be able to respond efficiently to changes. An agile workforce can provide immediate and accurate solutions to unforeseen changes. It is also seen that the development of agile employees requires new and flexible forms of organization (Alavi, et. al., 2014: 6274-6275). Other parts of this research are organized as follows. First, in the literature section, explanations that are considered necessary were made about the learning organization and organizational agility by conducting a literature review. Later, in the metadology section of the research, the necessary information about the universe and sampling, scale, data collection method and analysis methods were given. As part of the results, information about the demographic characteristics of participants was given and hypotheses were tested. Our research has also been completed with the conclusion section.

Literature Review

Learning Organization

As it is known, the concept of learning organization was invented by Peter Senge (1990) and is also considered the guru of learning organization. For the concept of learning organization used today, two different development processes can be mentioned. It is the learning of the organization, that is, the use of certain learning activities for the organization. The term learning organization has emerged as a transformation of the concept of organizational learning. A learning organization is an organization in which only learning occurs within the organization. It can be said that studies on organizational learning existed in 1970-1980. It is worth noting that it is still difficult to specify the exact relationship or distinction between these two concepts, as well as to specify the measurement of their use (cit. in Örtenblad, 2018: 150-151).

As Werner (2017) stated, to understand the contrast between these two concepts, he mentioned the importance of using the two terms interchangeably. In addition, a study of what an organization does and how it behaves highlights that it is distinctly different from research on how to change the current situation to behave more effectively. It is the difference between unintentional behavior in an organization and deliberate behavior to increase existing capacity (Watkins & Kim, 2017: 18). The learning organization is seen as an organization that has the capacity to integrate people and structures to move towards continuous learning and change (Yang, et al., 2004: 34).

The concept of learning organization does not express a specific form of organizational design itself. Instead, it rather describes an organizational way of thinking or philosophy that has some important design practices. Employees in a learning organization constantly use information management practices that allow them to generate and share information, and transfer this information to decision-making processes, ways of doing business. According to some management researchers, an organization's ability to learn and transfer and apply the knowledge it produces to jobs, activities is the only source of its sustainable competitive advantage (Robbins, et. al., 2013: 150).

A learning organization encourages the use of information within the organization to improve the ability of its employees to think critically and creatively. The learning organization assumes that both the act of learning will continue and creatively will last a lifetime. In this way, a system that responds to the needs of the internal and external environment of the organization and constantly transforms will emerge (Kearney & Zuber-Skerritt, 2012: 402). Some characteristics of learning organizations are to carry out works with different methods, to give importance to the training of employees and to motivate employees, to form work teams, to avoid accusations, to provide healthy communication, to provide sufficient information flow within the organization, to improve the decision-making abilities of employees, to be open to new ideas, and it can also be listed as making feedback operational, relying on verified information instead of assumptions, drawing lessons from each employee's experience, evaluating success and failure. A learning organization should facilitate learning for every employee and allow new ideas to emerge (cit. in Shahrabi, 2012: 2545).

There are many approaches to what an organization does to be a learning organization. Senge (1990) argued that personnel mastery, mental models, shared vision, team learning, and system thinking are the basis for the learning organization. Pedler, Burgoyne and Boydell (1991) discussed the concept of learning organization in eleven dimensions. Some characteristics of learning organizations (cited in Watkins & Kim, 2017: 18-19):

- The learning organization can transform itself through continuous learning.
- The learning organization can create systems that embrace and share learning across the organization.
- Flexible rewards can provide favorable conditions for the learning organization.
- The learning organization emphasizes the relationship of the organization with its external environment.
- Leadership that supports learning can provide the necessary conditions for the learning organization.
- Systems to control financial resources are an important component.
- In addition to system-level learning, individual and group / team learning is also important.

Watkins and Marsick (1993, 1996) defined the learning organization with seven different but interrelated dimensions at individual, team, and organizational levels. Creating continuous learning opportunities, encouraging inquiry and dialogue, team learning, creating systems to embrace and share learning, empower individuals to lead a collective vision, and have leaders who support learning. These dimensions and their definitions are briefly explained below.

The first dimension is Continuous Learning. It represents an effort to create continuous learning opportunities for all members of an organization (Watkins & Marsick, 1996: 6). Organizations include communities that are ready to help each other with many issues, such as sharing experiences and problem solving among individuals with similar interests and business areas. In this organization there is always a self-motivated continuous learning that is present to a certain degree (Dove, 1999: 27).

The second dimension is Inquiry and Dialogue. It refers to an organization's effort to create a culture of inquiry, feedback, and experience (Watkins & Marsick, 1996: 6). The dialogue process involves revealing, researching, and questioning differences of meaning and opinion on important issues. The importance of dialogue for an organization, on the other hand,

comes from the fact that it provides the basis for learning and change (Gear, et. al., 2002: 88-89).

The third dimension is Team Learning. It reflects the spirit and skills of collaboration that support the effective use of teams (Watkins & Marsick, 1996: 6). Teamwork among individuals in the organization should be encouraged. It is especially important to be able to solve Group problems together. In this way, individuals' dependence on top managers can be reduced and managers can work autonomously (Goh & Richards, 1997). Although individual learning is necessary for the learning organization, it can be said that individual learning is not sufficient for the team. For learning to be realized at a higher level, the information acquired by individuals must be accessible to others (Argote & Miron, 2011: 1126).

The fourth dimension is Embedded Systems. It demonstrates efforts to establish systems for capturing and sharing learning in the organization (Watkins & Marsick, 1996: 7). Learning can occur because of experimental studies, past experiences, or by learning from the experiences of others (Menon & Suresh, 2020: 310). Learning is impossible without knowledge. For "learning" to occur in an organization, information must be shared among employees. In this case, all employees must use information management techniques that will allow them to share as accurate, timely and clearly generated information as possible. Because of the minimization of structural and physical boundaries, open communication and intensive information sharing are possible in a learning organization environment (Robbins, et. al., 2013: 151).

The fifth dimension is System Connections. It reflects global thoughts and actions to connect the organization to its inner and outer environment (Watkins & Marsick, 1996: 7). In addition, employees of the organization will work more efficiently and target-oriented when they realize the impact of their work on the organization. Thus, it will be easier to reach the organization's goals once the operation of the whole system is known.

The sixth dimension is Strategic Leadership. It shows that leaders "think strategically about how to use learning to create change and move the organization in New Directions or new markets" (Watkins & Marsick, 1996: 7). Leaders need to create and support a collaborative environment that is critical to learning. It will be extremely difficult to reach a learning

organization without a strong and effective leadership style throughout the entire organization (Robbins, et. al., 2013: 151).

The seventh dimension is Empowerment. It refers to an organization's process of creating, sharing a collective vision, and receiving feedback from individuals about the gap between the current situation and the new vision (Watkins & Marsick, 1996: 7). In a learning organization, it is critical that the employees share information and cooperate in the activities in the whole organization, in the work carried out (between functional departments and hierarchical steps), minimizing the existing structural and physical boundaries. In such an unlimited environment, employees are free to act together, collaborate and learn from each other to do their job in the best possible way. Because of this need for cooperation, teams form an important part of the structural design of the learning organization. Employees are directed to teams according to the work and activities that need to be done, and these teams are authorized to solve problems and make decisions. Empowered employees and teams have little need for a supervisor who will conduct direct guidance and supervision. Managers are supporters, assistants, and guides of teams (Robbins, et. al., 2013: 150-151).

Learning ability is expressed as learning from organizational experience, know-how, developing employee abilities to face changes in the market. At the same time, learning ability is defined as the ability to use internal knowledge and knowledge provided from the external environment together, which is considered an important factor in the innovation processes of organizations (Zitkiene & Deksnys, 2018: 125). The aim of encouraging employee learning is to create an organization that strives to ensure continuous improvement and development of organizational performance. Continuous improvement and development that will come with learning will make the organization responsive. The responsive organization, on the other hand, will become more agile as it embodies the idea that every experience it encounters is a good or bad learning opportunity (Harraf & Wanasika, 2015: 684). Švagždienė, Jasinskas, Simanavičius (2017), the success of the learning organization depends on the values transferred. Practitioners need new organizational solutions, forms, and tools to embrace the changing environment and capture new opportunities. Successful adaptation to the external environment requires agile organizational providers, capabilities, and practices. To control and improve the level of agility, organizations need to be able to understand agility and determine which internal organizational factors affect it (Zitkiene & Deksnys, 2018: 116).

Organizational Agility

Agility has its origins in the manufacturing industry, where adaptation to changes in the supply chain requires both flexibility and agility. At the beginning of the 1990s, the concept of agility was determined that there was a need to adapt to organizational change in the face of dynamic and emerging market conditions, and this adaptation required speed (Harraf & Wanasika, 2015: 677). It seems that organizational agility has its roots in production. It has been defined as a production system that can rapidly switch between products in real time to meet changing market needs and adapt to customer needs (Zitkiene & Deksnys, 2018: 117).

It can be said that the market conditions and environmental elements in which organizations are located contain a high level of dynamics, complexity, and uncertainty. Naturally, these conditions have created competitive markets with great threats to the survival of organizations. In such an environment, it is extremely important to implement mechanisms that allow organizations to detect environmental changes, adapt to these changes, and respond appropriately. Because this knowledge will help organizations use emerging opportunities and new competitive advantages and achieve greater success. The concept of organizational agility has emerged for organizations to survive and succeed (Felipe, et. al., 2016: 1).

Beyond the changing nature of customer preferences, the speed and uncertainty of changes in technology increase the intensity of globalizing competition. Digitalization can be said to affect customer preferences and the product lifecycle, as well as facilitate international connections. In such an environment, research and development has become increasingly effective in the success of organizations. Ease of access and transfer of information contributes to the need for agility. Information expansion resulting from the speed of adaptation to changes will be able to provide the most effective response by determining the necessary action with the knowledge of the external environment that is relevant for organizations. The agility of organizations is now emphasized as the new normal (Harraf & Wanasika, 2015: 676).

Organizational agility: the ability of the company to respond quickly and on time to these unforeseen changes in suddenly changing and developing environments in the internal and external environment of the business, in other words, it can be defined as the ability of business to act quickly and effectively to turn the market opportunities in favor of meeting

the demands and needs of customers to unexpected environmental and technological changes (Akkaya & Tabak, 2018: 187). Organizational agility is becoming increasingly important as one of the main tools for achieving and maintaining a competitive advantage in a rapidly changing market environment. With the increase in electronic commerce, even small-scale businesses can compete on a global scale. The need for organizational agility is increasing to adapt and compete outside of the domestic market. On the other hand, it can be said that with their opportunities reaching global dimensions and increasing opportunities, organizations should have efficient and agile business processes, flexible organizational structure, open workforce, agile networks and partners, and technology that can be easily adapted. (Zitkiene & Deksnys, 2018: 115-116). For agility abilities, it can be said that they are special abilities. Because it is possible to provide the necessary strength and competence to react to changes. Organizational agility capabilities include responsiveness, competence, flexibility, and speed (Walter, 2020: 12).

It should be noted that when everything works well together, value can be created, captured and permanent competitive advantage can be obtained. The agility that organizations want to realize should be determined according to their own strategies and market positions. If organizations have strong dynamic capabilities, their perception of changes and developments in the environment will be healthier. Thus, in addition to better use of agility, they will sacrifice less efficiency (Teece, et. al., 2016: 31-32). Sharifi and Zhang (1999) examined organizational agility in four dimensions: Responsiveness, Competency, Flexibility and Speed. Relevant dimensions and definitions are briefly explained below.

Responsiveness Dimension. Responsiveness is defined as the ability to identify changes and respond fast to them, reactively and proactively and recover from these changes. It can be defined as perceiving and anticipating changes, sensing and estimation, instant reaction to change by including the rate of change in the system and recovery from change (Sharifi & Zhang, 1999: 17; Zhang & Sharifi, 2007: 354). The purpose of responsiveness is to determine the appropriate time and scope of competence and capability utilization. Responsiveness depends on an external driver and aims to control stimuli (Walter, 2020: 24). Organizational agility is an organizational ability to respond appropriately quickly and efficiently by detecting unexpected changes through the use and configuration of internal resources (Zitkiene & Deksnys, 2018: 118). If organizations can shift changes and developments in the

environment and react quickly, they will also gain a competitive advantage by adapting to changes (Akkaya & Tabak, 2020: 4).

Competency Dimension. The capacity of an organization to organize an event depends on its ability to use its abilities (Akkaya & Tabak, 2020: 5). Competency is defined as the comprehensive set of capabilities that ensure the productivity, efficiency, and effectiveness of activities towards the goals and objectives of an organization. The elements that make up the capability structure are strategic vision, appropriate technology, product/service quality, cost selectivity, high rate of new product promotion, change management, knowledgeable, competent, and empowered individuals, operational efficiency and effectiveness, cooperation, and integration (Sharifi & Zhang, 1999; Zhang & Sharifi, 2000). Operating efficiently, producing high-quality products, delivering on time, innovating, and managing core competencies are addressed within the concept of competency (Zhang & Sharifi, 2007: 354).

Flexibility Dimension. Flexibility is defined as the ability to produce different products and achieve different goals within the same facility. The elements that make up the flexibility structure are product volume flexibility, product model flexibility, product configuration flexibility, organizational flexibility, organizational problems flexibility, human flexibility (Sharifi & Zhang, 1999: 18; Zhang & Sharifi, 2000: 507; Zhang & Sharifi, 2007: 354). Flexibility has been expanded to include not only design and volume, but also people, resources, organizational flexibility to enable an organization to respond to changes (Zhang & Sharifi, 2007: 354). Flexibility is not a goal, but a means to achieve a desired outcome. Because of this, it is neither a change in the existing talent itself nor a change in how talent is obtained (Bernardes & Hanna, 2009: 41). Anticipated responses to a stimulus are indicative of an organization's overall flexibility. The responses and decisions of an organization regarding environmental stimuli are seen as a measure of the adaptability of that organization (Harraf & Wanasika, 2015: 675). Openness to alternative sources, different views, and different problem-solving ways can be achieved with flexibility (Akkaya & Tabak, 2020: 4-5). It seems that organizations that are flexible tend to have aspects of agility because they are successful in confronting environmental changes (Marlow & Casaca, 2003). In that case, the flexibility of an organization can be expressed as an interaction phenomenon that requires the organization's responsiveness to the changing environment and customer demands on the one hand, and dynamism in management on the other hand (Akkaya & Tabak, 2018: 188).

Speed Dimension. Speed is defined as the ability to perform tasks and operations as soon as possible. The elements that make up the speed structure are fast delivery time of new products to market, delivery speed and timely realization of products and services, and fast operation time (Sharifi & Zhang, 1999: 18; Zhangi & Sharifi, 2000: 508; Zhang & Sharifi, 2007: 354). It is the ability of an organization to realize the product it produces and the service it offers from the production stage to the final target in the most effective and short time (Akkaya & Tabak, 2018: 189). So, the speed dimension of organizational agility is recognized as an essential element of agility ability (Zhang & Sharifi, 2007: 354). In addition, the speed factor is also related to the decision-making process. Within the scope of innovation, speed is important for organizations to develop new knowledge against changes. In short, speed is a process that includes the ability of the organization to present the product or service efficiently and quickly (Akkaya & Tabak, 2020: 5). Businesses that can balance speed respond better to the external environment.

It can be said that the success of the learning organization depends on the values conveyed. Organizations need new organizational solutions, forms, and tools to embrace the changing environment and seize new opportunities. Organizational agility skills and practices are required to successfully adapt to environmental variables. To improve and develop organizational agility, organizations need to understand agility very well and determine which organizational factors affect agility (Zitkiene & Deksnys, 2018: 116).It can be said that organizational agility helps organizations change their frameworks and capital, increase their market share, or develop new goods and technologies. If organizations can change their internal resources according to the needs of their customers, they can increase their income (Akkaya & Tabak, 2020: 4-5).

Method

The Importance of Research

It can be said that both learning organization and organizational agility are very important factors for businesses. At this point, what makes the research different is that; can an organization have organizational agility by being a learning organization? Or do both phenomena go hand in hand? Are the two facts separate? If they are not separate, what are the degrees of relationship between them based on dimensions? The aim of the research, which emerged in line with the relevant study questions, is to examine the relationship between

learning organization and organizational agility. The hypotheses formed in line with the questions and purpose of the research was formed between the sub-dimensions of both concepts. The analysis was made by forming hypotheses between the sub dimensions of Learning Organization; Continuous learning, Inquiry and dialogue, Team learning, Embedded system, System connection, Strategic leadership, Empowerment, and the sub-dimensions of Organizational Agility; Responsiveness, Competency, Flexibility, and Speed.

Measures, Sample and Data Collection

The questionnaire method was used for the analysis part of the study, and the questionnaires used are the learning organization questionnaire by the authors Marsick & Watkins (2003) and the organizational agility questionnaires by Sharifi & Zhang (1999). Turkish adaptations of the relevant questionnaires were used. Marsick & Watkins (2003) learning organization scale was adapted to Turkish by Basım, Şeşen & Korkmazyürek (2007). Sharifi & Zhang (1999) organizational agility scale was adapted into Turkish by Akkaya & Tabak (2018). In addition to the two scale questions, demographic questions were added to the questionnaire form. The survey forms were delivered to the relevant participants via Google Drive, and the entire data collection process was completed online. At the end of the questionnaire collection process, a total of 437 questionnaires were collected, and after checking the results, it was determined that there were erroneous forms. The number of questionnaire forms that can be used was determined as 394. Considering the minimum sample size that should be at the 95% certainty level, it is seen that the number of 394 surveys is valid when compared to the population volume (Sekaran, 2003; Coşkun, Altunışık & Yıldırım, 2020). The data has been obtained from authorized employees of a corporate firm that has been offering retail and franchise services in 47 different countries for 33 years in the textile industry with its retail merchandising service and has a strong competitiveness in its sector. In addition, relevant data were provided in March 2021.

Findings

Demographic Features

Under the title of demographic characteristics, there is an analysis of the answers to the questions asked to obtain general information about the participants to whom the data were obtained within the framework of the research.

Table 1. Distribution by Age Variable

Age	F	%
24-32	198	50.3
33-41	121	30.7
42-50	60	15.2
51-59	15	3.8
Total	394	100.0

As seen in Table 1, 50.3% of participants are in the 24-32 age range, 30.7% are in the 33-41 age range, 15.2% are in the 42-50 age range, and 3.8% are in the 51-59 age range.

Table 2. Distribution by Gender Variable

Gender	F	%
Female	208	52.8
Male	186	47.2
Total	394	100.0

As seen in Table 2, 52.8% of the participants are women and 47.2% are men.

Table 3. Distribution by Marital Status Variable

Marital Status	F	%
Married	210	53.3
Single	184	46.7
Total	394	100.0

As seen in Table 3, 53.3% of the participants are married and 46.7% are single.

Table 4. Distribution by Educational Status Variable

Educational Status	F	%
PhD	2	.5
Postgraduate	19	4.8
Undergraduate	106	26.9
Associate degree	78	19.8
High school	189	48.0
Total	394	100.0

As seen in Table 4, 0.5% of the participants are PhD graduates, 4.8% are graduates, 26.9% are Undergraduates, 19.8% Associate Degree and 48.0% are High School graduates.

Table 5. Distribution by Knowledge of Foreign Language Variable

Knowledge of Foreign Language	F	%
Yes	235	59.6
No	159	40.4
Total	394	100.0

As seen in Table 5, it is seen that 59.6% of the participants do not have knowledge of foreign language, and 40.4% have knowledge of foreign language.

Table 6. Distribution according to the Variable of Working Period at the Institution

Working Period	F	%
2-6 year	220	55.8
7-11 year	90	22.8
12-16 year	41	10.4
17-21 year	25	6.3
22 year and above	18	4.6
Total	394	100.0

As seen in Table 6, 55.8% of respondents have worked in the relevant institution for 2-6 years, 22.8% have worked for 7-11 years, 10.4% have worked for 12-16 years, 6.3% have worked for 17-21 years.

Table 7. Distribution by Personal Development Training Taken Individually Variable

Personal Development Training	F	%
Yes	106	26.9
No	288	73.1
Total	394	100.0

As seen in Table 7, when asked whether the participants had personal development training individually, it is seen that 26.9% did not have personal development training, and 73.1% had personal development training.

Data Analysis

In the most general sense of the parameter, it is divided into parametric and nonparametric tests. The most important assumption of parametric hypothesis tests in which mass averages are compared is the normality assumption. If the normality assumption is broken, nonparametric tests are preferred. But if it is studied with many observations, it is assumed that the data corresponds to the normal distribution. Therefore, since 394 samples were studied within the scope of this research, the data will not be tested for normality. Another important assumption of parametric tests is the assumption of homogeneous variance. But the assumption can also be omitted when normality is achieved. In addition, dependent variables must be continuous variables.

In the hypotheses established with the research data, if there is a significant difference between the averages of two independent groups, an independent two-sample T test is used, and if there is a significant difference between the means of more than two independent groups, one-way analysis of variance is used. In addition, in cases where a difference was determined between the mean population because of the variance analysis, the groups originating from the difference were determined by post-hoc tests. Before the Post-Hoc tests, the homogeneity of the variances was tested with Levene test statistics. In multiple comparisons, Tukey from Post-Hoc tests were used when variances were homogeneous, and Tamhane's T2 was used in cases where it was not homogeneous. Within the scope of the research hypothesis tests; New continuous variables formed by taking the average of all Ordinal (sequential) variables separately for each scale included in the learning organization scale and organizational agility scale were accepted as dependent variables and demographic variables were accepted as independent variables. Relationships between continuous variables, that is, the direction and magnitude of a two-way linear relationship between two continuous variables (new continuous variables created by taking the average of the whole Ordinal (sequential) variables separately for each subscale within the scales) have been tested by Pearson Correlation analysis under the normal distribution assumption.

Hypotheses have been formed accordingly to look at the relationships between seven sub-dimensions (Continuous Learning, Inquiry and Dialogue, Team Learning, Embedded Systems, System Connections, Strategic Leadership, Empowerment) within the learning organization and four sub-dimensions (Responsiveness, Competency, Flexibility, Speed)

within the scope of organizational agility. Thus, 28 hypotheses have been formed, and as predicted, it can be said that the relationship between each hypothesis exists, that is, the Pearson Correlation values are greater than 0.5, and thus the hypotheses are accepted. Again, it should be noted that being a learning organization is also important in terms of organizational agility.

As seen in Table 8, there is a high and significant linear relationship between the Continuous Learning dimension, which is one of the sub-dimensions of the learning organization, and the sub-dimensions of Organizational Agility, namely the variables of Responsiveness, Competency, Flexibility and Speed. There is a high and significant linear relationship between the Inquiry and Dialogue dimension, which is one of the sub-dimensions of the learning organization, and the sub-dimensions of Organizational Agility, namely the variables of Responsiveness, Competency, Flexibility and Speed. There is a high and significant linear relationship between the dimensions of Learning in Team, which is one of the sub-dimensions of the learning organization, and the sub-dimensions of Organizational Agility, namely the variables of the Responsiveness, Competency, Flexibility and Speed.

Table 8. Correlations

LO Dimension	OA Dimensions	Pearson Correlation
Continuous Learning	Responsiveness	.635
	Competency	.738
	Flexibility	.658
	Speed	.608
Inquiry and Dialogue	Responsiveness	.571
	Competency	.672
	Flexibility	.639
	Speed	.566
Team Learning	Responsiveness	.606
	Competency	.668
	Flexibility	.626
	Speed	.569
Embedded Systems	Responsiveness	.652
	Competency	.721

LO Dimension	OA Dimensions	Pearson Correlation
	Flexibility	.670
	Speed	.599
System Connections	Responsiveness	.596
	Competency	.644
	Flexibility	.599
	Speed	.543
Strategic Leadership	Responsiveness	.616
	Competency	.685
	Flexibility	.593
	Speed	.562
Empowerment	Responsiveness	.605
	Competency	.628
	Flexibility	.623
	Speed	.577

There is a high and significant linear relationship between the Embedded Systems dimension, which is one of the sub-dimensions of the learning organization, and the sub-dimensions of Organizational Agility, namely the variables of the Responsiveness, Competency, Flexibility and Speed. There is a high and significant linear relationship between the System Connections dimension, which is one of the sub-dimensions of the learning organization, and the sub-dimensions of Organizational Agility, namely the variables of Responsiveness, Competence, Flexibility and Speed. There is a high and significant linear relationship between the Strategic Leadership dimension, which is one of the sub-dimensions of the learning organization, and the sub-dimensions of Organizational Agility, namely the variables of Responsiveness, Competence, Flexibility and Speed. There is a high and significant linear relationship between the dimensions of Empowerment, which is one of the sub-dimensions of the learning organization, and the sub-dimensions of Organizational Agility, namely the variables of the Responsiveness, Competency, Flexibility and Speed.

In organizations, it is important that individuals have an open and stimulating learning environment for new ideas. Such an environment will facilitate the acquisition of knowledge and learning skills, while the ability to adapt, be flexible and respond to changes in the

environment will also improve. Organizations dedicated to learning will train employees and managers who can manage and cope with changes (cit. in Muduli, 2016: 1570).

The scope of Organizational agility includes change, trust, risk taking, teamwork and cooperation, open information exchange, personal accountability, continuous learning, mutual commitment, and diversity (Dyer & Shafer, 1998: 21-22). In organizations, it is strategically important for leaders to create and support the agile mission, vision (cit. in Apelbaum et. al., 2017: 12). Various factors in an organization's environment have a direct impact on agility. But leadership also plays an important role in influencing agility (Apelbaum, et. al., 2017: 73).

Agile organizations have basic difficulties such as analyzing the environment, processing the emerging information, making quick decisions, creating ad hoc organizational infrastructures, using resources effectively, sharing insights and learning. Senior leaders must act as guardians of the vision and core values. Other individuals cooperate mutually to do everything necessary for the organization to be successful (Dyer & Shafer, 1998: 16). An agile organization ensures rapid implementation of solutions to make effective decisions and respond to changes (Trinh, et. al., 2012: 171). It can be argued that the transition to adaptive learning organizations involves a lengthy effort filled with great challenges and setbacks along the way. This effort includes systematic and continuous change within the scope of the work specific to the organization (cit. in Apelbaum, et. al., 2017: 8).

Perhaps this effort involves a long and difficult process. However, considering the degree of success and competitiveness of the organization in which the research application is carried out, it can be said that the effort to be endured has great advantages. Considering the environmental factors including the development and rapid change in technology in our age, it is seen that the effort to be endured is reasonable for the organization to grow and gain competitive power and thus to be a leader in its sector.

Discussion and Conclusion

Thanks to the learning climate that occurs in learning organizations, individuals and teams within the organization are provided with tools and opportunities for learning. Employees should be encouraged to experience and accept their failures as a learning opportunity. It is

important to facilitate the action of learning (Örtenblad, 2018: 152). It is also important to make it clear to individuals that it is a pleasant and not a feared situation, and to ensure that this climate is felt. It can be said that the creation of structures that encourage, facilitate and support learning is an organizational necessity (Watkins & Kim, 2017: 25). It has been determined that managers in organizations that are agile can achieve conditions that encourage learning (Hamad & Yozgat, 2017).

The main goal of agility in an organization is to better adapt to change and gain a competitive advantage. It is also about getting opportunities from changes in the environment and being able to develop these opportunities in an environment that is uncertain and unpredictable. Because of this, organizations that are agile need a range of capabilities and enablers to respond to changes (Zitkiene & Deksnys, 2018: 119). In this case, it can be said that learning and agility complement each other. Faced with uncertainty and uncertain information in the organization, individiuals cannot interpret situations or clarift ambiguous information, which causes delays in decisions (Darvishmotevali, et. al., 2020: 2). This is a form of behavior that is not valid and not accepted in market conditions. If an organization wants to exist successfully, it must recognize the value of both learning and agility and regulate and develop the organizational structure accordingly. Environmental uncertainty means understanding the environment, paying attention to environmental uncertainty according to the characteristics of the environment. It is important that the organization adapts to such an environment (Darvishmotevali, et. al., 2020: 2). It is the ability to learn from experience, know-how, share knowledge and develop employees' skills to face changes in the environment. Learning ability is an important factor in innovation processes as well as adapting to the changing market (Zitkiene & Deksnys, 2018: 125).

Organizational agility is a conscious (highly aware) response to the uncertain, complex, and changeable environment that organizations are in, both for their growth and development in a competitive environment and for a sustainable competitiveness. Agile organizations choose the way to renew their structures by following current practices and adapting these practices to themselves. Organizations should be adapted to improve their readiness for future changes in the global dimension, mitigate risks, and seize potential opportunities. To develop organizations in this way, agility and learning factors are emphasized. In this way, agility and learning factors are emphasized to develop organizations (Zainal, et. al., 2020: 765). Through the dimensions of the learning organization created by Watkins and Marsick (1997),

establishing a learning culture helps organizations position themselves to move forward in an uncertain future (cit. in Kim, et. al., 2017: 188).

It can be asked whether the concept of agility is valuable, and under what circumstances it has value. In the same way, it can be asked how agility is motivated, what types of abilities are necessary or not important. It can be said that the organization's perception and response capabilities are dynamic if organizations allow them to reorganize and relocate their existing resources as environmental conditions change. Because of this, it can be noted that agility acts as a kind of protective buffer against performance decreases, rather than creating value (Tallon, et. al., 2019: 220). The rapid acceleration of the change and information process increases the need for more flexible employees and agile companies. The only way to move forward is through constant learning. Companies that learn faster than others will win (Thoren, 2020: 57).

References

Akkaya, B. & Tabak, A. (2018). Örgütsel Çeviklik Ölçeğinin Türkçeye Uyarlanması: Geçerlik ve Güvenirlik Çalışması. *The Journal of Human and Work*, *5*(2), 185-206.

Akkaya, B. & Tabak, A. (2020). The Link Between Organizational Agility and Leadership: A Research in Science Parks. *Academy of Strategic Management Journal*, *19*(1), 1-17.

Alavi, S., Abd. Wahab, D., Muhamad, N. & Arbab Shirani, B. (2014). Organic structure and organisational learning as the main antecedents of workforce agility. *Int. J. Prod. Res.*, *52*(21), 6273–6295.

Apelbaum, S. H., Calla, R., Desautels, D. & Hasan, L. N. (2017). The challanges of organizational agility: part 1. *Industrial and Commercial Training*, *49*(1), 6-14.

Apelbaum, S. H., Calla, R., Desautels, D. & Hasan, L. N. (2017). The challanges of organizational agility: part 2. *Industrial and Commercial Training*, *49*(2), 69-74.

Argote, L. & Miron-Spektor, E. (2011). Organizational Learning: From Experience to Knowledge. *Organization Science*, *22*(5), 1123-1137.

Arun, N., Coyle, P. T. & Hauenstein, N. (2012). Learning agility: still searching for clarity on a confounded construct. *Ind. Organ. Psychol.*, *5*(3), 290–293.

Basım, N., Şeşen, H. & Korkmazyürek, H. (2007). A Turkish Translation, Validity and Reliability Study of the Learning Organization Questionnaire. *World Applied Sciences Journal*, *2*(4), 368–374.

Bernardes, E. S. & Hanna, M. D. (2009). A theoretical review of flexibility, agility and responsiveness in the operations management literature. *International Journal of Operations & Production Management*, *29*(1), 30-53.

Coşkun R., Altunışık, R. & Yıldırım E. (2020). *Sosyal Bilimlerde Araştırma Yöntemleri: SPSS Uygulamalı*. Sakarya: Sakarya Yayıncılık, 10. Baskı.

Darvishmotevali, M., Altınay, L. & Köseoğlu, M. A. (2020). The link between environmental uncertainty, organizational agility, and organizational creativity in the hotel industry. *International Journal of Hospitality Management*, *87*, 1-9.

Dove, R. (1999). Knowledge management, response ability, and the agile enterprise. *Journal of Knowledge Management*, *3*(1), 18-35.

Dyer, L. & Shafer, R. A. (1998). From Human Resource Strategy to Organizational Effectiveness: Lessons from Research on Organizational Agility. *Center for Advanced Human Resource Studies*, 1-35.

Felipe, C. M., Roldan, J. L. & Leal-Rodriguez, A. L. (2016). An explanatory and predictive model for organizational agility. *Journal of Business Research.* http://dx.doi.org/10.1016/j.jbusres.2016.04.014.

Gear, T., Vince, R., Read, M. & Leonard Minkes, A. (2002). Group enquiry for collective learning in Organizations. *Journal of Management Development*, *22*(2), 88-102.

Goh, S. & Richards, G. (1997). Benchmarking the learning capability of organizations. *European Management Journal*, *15*(5), 575-583.

Hamad, Z. M. M. & Yozgat, U. (2017). Does organizational agility affect organizational learning capability? Evidence from commer- cial banking. *Management Science Letters*, *7*, 407-422.

Harraf, A. & Wanasika, I. (2015). Organizational Agility. *The Journal of Applied Business Research*, *31*(2), 675-686.

Kearney, J. & Zuber-Skerritt, O. (2012). From learning organization to learning community, Sustainability through lifelong learning. *The Learning Organization*, *19*(5), 400-413.

Kim, K., Watkins, K. E. & Lu, Z. (2017). The impact of a learning organization on performance. *European Journal of Training and Development*, *41*(2), 177-193.

Marlow, P. B. & Casaca, A. C. P. (2003). Measuring lean ports performance. *Int. J. Transp. Manag.*, *1*(4), 189–202.

Marsick, V. J. & Watkins, K. E., (2003). Demonstrating the Value of an Organization's Learning Culture: The Dimensions of the Learning Organization Questionnaire. *Advances in Developing Human Resources*, *5*(2), 132-151.

Menon, S. & Suresh, M. (2020). Factors influencing organizational agility in higher education. *Benchmarking an International Journal*, *28*(1), 307-332.

Muduli, A. (2016). Exploring the facilitators and mediators of workforce agility: an empirical study. *Management Research Review*, *39*(12), 1567-1586.

Örtenblad, A. (2018). What does "learning organization" mean? *The Learning Organization*, *25*(3), 150-158.

Overby, E., Bharadwaj, A. & Sambamurthy, V. (2006). Enterprise agility and the enabling role of information technology. *Eurpean Journal of Information Systems*, *15*(3), 120–131.

Qin, R. & Nembhard, D. A. (2010). Workforce agility for stochastically diffused conditions A real opitons perspective. *Int. J. Production Economics*, *125*, 324-334.

Rigby, D. K. (2020). Çeviklik: Oyuna Girmenin ve Oyunda Kalmanın Yolu. *Dijital Dönüşüm Çeviklik*. Harvard Business Review Press. İstanbul: Optimist Yayın.

Robbins, S. P., Decenzo, D. A. & Coulter, M. (2013). *Fundamentals of Management Essential Concepts and Applications*. 8th Edition, Pearson Education, New Jersey.

Sekaran, U. (2003). *Research Methods for Business: A Skill Building Approach*. New York: John Wiley.

Shahrabi, B. (2012). The Role of Organizational Learning and Agility in Change Management in State Enterprises: A Customer-Oriented Approach. *International Research Journal of Applied and Basic Sciences*, *3*(12), 2540-2547.

Sharifi, H. & Zhang, Z. (1999). A methodology for achieving agility in manufacturing organisations: An introdustion. *Int. J. Production Economics*, *62*, 7-22.

Tallon, P. P., Queiroz, M., Coltman, T. & Sharma, R. (2019). Information technology and the search for organizational agility: A systematic review with future research possibilities. *Journal of Strategic Information Systems*, *28*, 218-237.

Teece, D., Peteraf, M. & Leih, S. (2016). Dynamic Capabilities and Organizational Agility. *California Management Review*, *58*(4), 13-35.

Thoren, P. M. (2020). *Çevik İnsanlar*. İstanbul: Sola Unitas.

Trinh, T. P., Molla, A. & Peszynski, K. (2012). Enterprise Systems and Organizational Agility: A Review of the Literature and Conceptual Framework. *Communications of the Association for Information Systems*, *31*(8), 167-193.

Walter, A. T. (2020). Organizational agility: ill-defined and somewhat confusing? A systemeatic literatüre review and conceptualization. *Managemen Review Quarterly*.

Watkins, K. E. & Kim, K. (2017). Current status and promising directions for research on the

learning organization. *Human Resource Dev. Quarterly*, *29*, 15-29.

Watkins, K. E. & Marsick, V. J. (1993). *Sculpting the learning organization: Lessons in the art and science of systemic change*. San Francisco: Jossey-Bass.

Watkins, K. E. & Marsick, V. J. (1996). *In action: Creating the learning organization*. Alexandria, VA: American Society for Training and Development.

Yang, B., Watkins, E. K. & Marsick, V. J. (2004). The Construct of the Learning Organization: Dimensions, Measurement, and Validation. *Human Resource Development Quarterly*, *15*(1), 31-55.

Zainal, A. Y., Yousuf, H. & Salloum, S. A. (2020). *Dimensions of Agility Capabilities Organizational Competitiveness in Sustaining*. https://doi.org/10.1007/978-3-030-44289-7_71, 762-772.

Zhang, Z. & Sharifi, H. (2000). A methodology for achieving agility in manufacturing organisations. *International Journal of Operations & Production Management*, *20*(4), 496-512.

Zhang, Z. & Sharifi, H. (2007). Towards Theory Building in Agile Manufacturing Strategy – A Taxonomical Approach. *IEEE Transactions on Engineering Management*, *54*(2), 351-370.

Zitkiene, R. & Deksnys, M. (2018). Organizational Agility Conceptual Model. *Montenegrin Journal of Economics*, *14*(2), 115-129.

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Chapter 3 - The Perspective of Perinatal Women on Anti-COVID-19 Pandemic in Macao Society: A Qualitative Study

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Chapter Highlights

- The COVID-19 pandemic carried out a significant impact on pregnant women's life.
- Pregnant women experienced various unusual challenges including psychological distress, interruption of prenatal health services, and financial constraint.
- Pregnant women changed their hygiene behaviors under the psychological pressure of fear and anxiety.
- Pregnant women were overwhelmed by too much information.
- The implemented anti-epidemic measures are quite effective in Macao, however, there are some aspects need to be improved.

Introduction

An outbreak of a novel coronavirus, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), emerged in late December 2019 in Wuhan City, Hubei Province in China, but rapidly spreads to more than 200 countries or regions worldwide (Sanyaolu et al., 2020). So it quickly caused the attentions of the World Health Organization (WHO). Consequently, on 30 January 2020, the WHO issued a public health emergency of international concern (PHEIC) (WHO, 2020a). On February 11, 2020, the disease caused by this virus was officially named as Corona Virus Disease 2019 (COVID-19) by WHO (WHO, 2020b). The first confirmed case of COVID-19 in Macao Special Administrative Region (Macao SAR) was on 22 January 2020; as of 25 May, 2021, totally, there have been 51 cases, 49 input cases and 2 local infections.

In response to this emergency event, many countries/regions have implemented various measures including quarantine, mandatory wearing of masks, closing public places, suspending major events, avoiding travel, and even lockdown cities (Usher K., Bhullar N., Jackson D.et al., 2020). Any outbreak of epidemic would cause significant public panic and psychological impact on citizens (Shorey & Valerie, 2020). According to the studies in China (Huang Y. & Zhao N., 2020), Italy (Moccia et al., 2021), Greece (Voitsidis et al., 2020), in the early stage of the epidemic, even people in non-severely affected areas have experienced obvious stress response, anxiety, depression, and sleep impairment. Pregnant women, as well as mental and physical changes during pregnancy, are more likely to be at risk (Mapa, Distefano, & Rizzo, 2020).

A study conducted in China to assess the mental health of pregnant women showed that since the Chinese government announced the human-to-human transmission of COVID-19 on January 20, 2020, the incidence of clinical depression in pregnant women was significantly increased, from 26% before the date to 34.2% between February 5 and September 9, 2020 (Wu et al., 2020). The researchers found that the increase of depression among pregnant women was not related to the number of confirmed cases in the local area. This means, even not in an epidemic area, the incidence of depression in pregnant women is still higher than before the epidemic (Wu et al., 2020).

Another online survey of 4,451 pregnant women conducted in the United States from April to May 2020 showed that nearly 30% of participants reported high preparedness stress and high perinatal infection stress (Mapa et al., 2020). In addition, an online survey conducted in Ontario, Canada from June to July 2020 showed that 57% of the sample reported clinically elevated depression more than 30% reported elevated worries, and 19% reported insomnia (Khoury, Atkinson, Bennett, Jack, & Gonzalez, 2021). Other studies carried out among Italian pregnant women have also demonstrated a significant negative impact on the mental health because of confinement by COVID-19 epidemics (Ravaldi, Wilson, Ricca, Homer, & Vannacci, 2020).Contrarily, some updated studies show that there is no evidence of vertical mother-to-child transmission of SARS-CoV-2 (Chen et al., 2020; Rasmussen, Smulian, Lednicky, Wen, & Jamieson, 2020), and the severity and fatality rates of pregnant women infected with COVID-19 are not as high as that caused by other coronaviruses (such as SARS-CoV, MERS-CoV) infection (Wong, Chow, & Swiet, 2003; Alfaraj, AlTawfiq, & Memish,2019). But, at the beginning of the epidemic, too much unknowns on COVID-19 cause public panic, sense of danger, particular pregnant women since they may be one particularly vulnerable group during a viral outbreak (Wu et al., 2020).

Macao SAR is close to Hong Kong, Guangzhou, Shenzhen, and located in the Greater Bay Area (GBA). The area has a population of 71 million, and Macao SAR has about 670,000 total population on a 32.9 km^2 city, which means 21,717 people per square kilometer. Therefore, the city is reputed as the most densely populated area in the world (United Nations, 2020). In addition, Macao is a world tourism hub and gaming industry city, before the COVID-19 pandemic, about 38-40 million visitors entered Macao every year (Government of Macao Special Administrative Region, 2020). Crowded area has a high potential risk of transmission of infectious diseases like COVID-19 virus, which is primarily transmitted between people through respiratory droplets and contact routes (Chan et al., 2020).

Taking the lesson from the Severe Acute Respiratory Syndrome (SARS) broke out in 2003, which caused a catastrophic impact on GBA, the Macao SAR government responded to COVID-19 pandemic very quickly, and has implemented series stringent measures to mitigate the outbreak since early February of 2020. The measures include lockdown city, stay-at-home, mandatory wearing of masks, quarantines for travelers, closing public places, suspending major social activities and so on (Lio et al., 2021). The preventive and protective

measures are indeed effective in curbing the virus spread and morbidity, however, the measures inevitably carry out negative impacts on whole society and individuals (Brooks et al., 2020). Pregnant women, as well as mental and physical changes during gestation, are more likely to be at risk (Mapa et al., 2020), so they are particularly sensitive to all related to the pandemics. Therefore, the study aims to understand and reflect the measures of anti-COVID-19 from the perspective of perinatal women.

Methods

Research Participants

From November to December 2020, a purposive snowball sampling method was used to select the research participants following the principle of maximum diversity of demographic characteristics such as age, job, pregnancy history, and family income. Inclusion criteria included Macao residents, confirmed pregnant from January to May 2020, being able to speak Chinese, and willing to participate in the study. Exclusion criteria were those with unstable pregnant conditions, and those diagnosed with mental problem. The sample size was determined by data saturation. Eighteen participants were individually interviewed. The general characteristics of participants are presented in Table 1.

Table 1. Socio-demographic Characteristics of the Participants

Numbers	Age	Education level	Occupation	Pregnancy and stage*	Parity
A1	31～35	Undergraduate	Office worker	Second trimester	Multiparious
A2	36～40	Undergraduate	Engineer	Second trimester	Primiparious
A3	21～25	Undergraduate	Unemployed	Second trimester	Primiparious
A4	25～30	Undergraduate	Office worker	Third trimester	Primiparious
A5	31～35	Undergraduate	Casino attendant	Third trimester	Multiparious
A6	31～35	Undergraduate	Nurse	Third	Primiparious

Numbers	Age	Education level	Occupation	Pregnancy and stage*	Parity
				trimester	
A7	41～45	Undergraduate	Office worker	First trimester	Multiparious
A8	31～35	Junior college	Accountant	Third trimester	Primiparious
A9	36～40	Postgraduate	Office worker	Second trimester	Primiparious
A10	31～35	Postgraduate	Doctor	Second trimester	Primiparious
A11	31～35	Undergraduate	Clerk	Third trimester	Primiparious
A12	31～35	Undergraduate	Office worker	Third trimester	Primiparious
A13	31～35	Undergraduate	Unemployed	Third trimester	Primiparious
A14	25～30	Undergraduate	Unemployed	Third trimester	Primiparious
A15	31～35	Undergraduate	Sales	Third trimester	Primiparious
A16	36～40	Junior college	Merchant	Third trimester	Primiparious
A17	25～30	Undergraduate	Casino attendant	First trimester	Multiparious
A18	31～35	Undergraduate	Unemployed	Third trimester	Multiparious

Note:*calculated at the end of January 2020

Data Collection

With literature review and experts' consultation, six semi-structured interview questions were formulated. A pilot interview with two pregnant women was conducted to ensure the clarity and identify any problems followed by some modifications accordingly. The final questions include

(1) Please share about the preventive measures or actions you have taken during COVID-19 outbreak;

(2) What is your worry about during the epidemic? And what is your specific feelings?

(3) What is the biggest impact of the epidemic on your life?

(4) How much did you pay attention to the pandemic-related information?

(5) What are your expectations and perceptions on the pregnancy health services during pandemic?

(6) What kind of social support would you want to have?

To avoid personal contact during pandemic, the one-to-one interview was conducted by telephone. Each interview was about 30-40 min. An individual appointment was made with each interviewee in advance to ensure that they can be interviewed in their convenient time and in a quiet place without interruptions (Atkinson, 2017). At the beginning of interview, the researcher introduced the purposes and procedures of the study, and obtained orally informed consent. The interviews were audio recorded and kept confidential. The interviewer remained neutral in data collections and built good relationships with interviewees. The techniques such as active listening, patient acceptance, and clarification were applied to ensure the authenticity of the information and to avoid bias.

Data Analysis

Data analysis was performed simultaneously with data collection for determination of the data saturation. Two research assistants transcribed all recorded data, and two principal researchers employed thematic analysis method to perform analysis independently. After the initial themes emerged, both researchers discussed and compared their findings, and finally reached consensus on each theme and sub-themes. This technique helps to maximize the credibility of the analysis and increase the rigor of the study.

Ethical Considerations

The Ethics Committee of Macao Polytechnic Institute approved the study before data collection. The informed consent form was virtually signed by each participant at the beginning of interview. Before signing the form, interviewer clearly explained the purpose and procedures of the study and ensured the participation in the study was voluntary.

Participants could refuse or withdraw from the study at any time. In addition, participants were informed that they can also request to turn off the recorder if any contents they think not appropriate for recording, their identities were replaced by number and would not be revealed in any research reports and publications.

Results

Demographic Characteristics of Participants

Eighteen participants aged between 21 to 40 years old, among them, eleven in third trimester, five in second trimester, and two in first trimester (see table 1). Majority of them (83.3%) had a bachelor or above degree, other 3 (16.7%) had a secondary education. Four participants were unemployed, and all others had job, half of them work in casinos or gaming related companies.

Results of Thematic Analysis

Four theme categories were extracted from data analysis, which include: (1) Strict and successful anti-epidemic measures implemented; (2) Humanized attention to people's daily live; (3) Timely information provided but being overwhelmed; (4) Difficulties and special expectations related to anti-epidemic.

Theme 1. Strict and Successful Anti-epidemic Measures implemented

Preventive measures are recognized as the most effective ways to curb the infectious diseases' transmission. Like other countries or regions, the Macao SAR started to implement various measures on February 23rd 2020. The multiple measures were implemented strictly, but the participants generally acknowledged all measures were necessary and effective, and showed cooperative.

> *"I feel (Macao) government responds very quickly, and starts to implement various and strict curbing measures since very early time"*
> *"The measures indeed carry out a lot of inconveniences, but I feel it is necessary, otherwise, our city could be collapsed like other places"*

"The pandemic is controlled very well in Macao, comparing to neighbor regions, we are very lucky and good"

"Some companies showed advanced awareness of epidemic prevention. I got to know something on the epidemic from informal channel at the beginning of January 2020. In fact, at that time, there had been no official report on the epidemic. Our company started to distribute masks to us and remind us wearing masks"

Theme 2. Humanized Attention to People's Daily Live

Most of participants agreed that the Macao government is very humane in fighting the COVID-19 epidemic, and considering all aspects of residents' livelihood such as financial support, supply of daily necessities to household, online counseling to vulnerable people, providing various disinfectants so on.

"Considering the risk of my baby and myself, I applied an unpaid leave since the outbreak of COVID-19. However, our government is really very nice, waiving our water and electricity fee, and offering electronic consumer cards with ten thousands Macao Pataca (1Pataca =0.84 USD) for each resident"

"I stay at home, the social workers always send something to my room"

"The government is very thoughtful amid the pandemic, they offer free disinfectants, even tissues at anywhere such as all entrance of buildings, elevators, supermarkets, etc."

"Health professionals are great, they are battling the virus at the frontline but never forget us; they call me regularly for following up and offering counseling"

Theme 3. Timely Information provided but Being Overwhelmed

Almost all participants said various media including mass media and self-media keep broadcasting the relevant information. It is good to offer the update information to society, however, some participants expressed they were overwhelmed by the diverse information, especially too much unpleasant news upsets the pregnant women.

"Local TV channels 24 hours broadcast local, nearby or global new cases, the death rate"

"My mobile keeps receiving the related information or announcement on hospital or community health centers' services available schedules"

"At the beginning, I am eager to know all related information, but I feel quite exhausted and confused when too much information, particularly some unpleasant news make me uncomforted"

Theme 4. Difficulties and Special Expectations related to Anti-epidemic

About half of participants expressed their pregnancy following-up visits were interrupted, and face-to-face health education was cancelled. These made them worry about their readiness to give birth. Moreover, to control the pandemic, some tedious procedures were required in all public places, which made pregnant women feel difficult, they also express sort of expectations.

"I am in 8 gestational months, wearing mask is really very hard for me, but I have to (wear the mask) once I walk out of my door"

"I broke the water that day, and rushed to the hospital in the morning, the officer told us (participant and her husband) to fill health declaration form and required us to do the nucleic acid testing first; totally taking us almost eight hours for admission process"

"I hope the hospital could set the special word for perinatal women and their families during this special period, and implement isolation measures to reduce some tedious and complicated procedures for going to laboring women"

"It would be much better if hospitals can offer more vivid virtue health education program and guidance to us"

Discussion

This preliminary study explored the perspective of perinatal women on anti-COVID-19 pandemic in Macao society. The study finding theme 1 showed that during the pandemic, the daily life, social connection and leisure activities of pregnant women were overly changed due to mandatory social distance and self-isolation, which were consistent with the results of Brooks's study (Brooks, Weston, & Greenberg, 2020). Many countries/regions had adopted various restrictive measures to prevent the spread of the epidemic, such as Italy (the first

epicenter of COVID-19 breakout in Europe) (Ravaldi et al., 2020), Indonesia (Batmang et al., 2021; Maksum, & Purwanto, 2022; Restuati et al., 2021), Turkey (Atilgan, & Tukel, 2021; Hebebci, 2021; Hebebci, Bertiz, & Alan, 2020; Kara, 2021; Kibici, 2021; Sahin & Kabakci, 2021), Spain (Biviá-Roig, 2020), Belgium (Constandt, 2020). The Macao SAR government had adopted various restrictive measures to prevent the spread of the epidemic when the first case was confirmed (Lio et al., 2021). The measures include mandatory wearing mask, keeping social distance, limitation hospital visiting, closing all casinos, quarantining travelers, suspending all schools, and working from home etc. These measures actually confine the freedom of residents, and significantly affect their daily life.

However, our findings demonstrate that pregnant women generally acknowledged what the government and health professionals done. It may be because curbing COVID-19 epidemic in Macao SAR is really very effective and has received a broad appreciation from residents, neighbors or other countries. The healthcare system of Macao SAR has achieved what was appraised by local media as “zero intensive-cases, zero deaths, and zero nosocomial infections” (Bian et al., 2020).

A public online survey conducted by Macao Polling Research Association on “the effectiveness of local COVID-19 outbreak prevention measures” showed 90% positive responses (Bian et al., 2020). On the other hand, as many studies reported that pregnant women with COVID-19 are more vulnerable, at higher risk of hospitalization and severer ill than are women of the same age who are not pregnant (Subbaraman, 2021), and pregnant women are extraordinarily worried about contracting the virus and passing it to their babies, or causing stillbirth or growth restriction (Mapa et al., 2020; Wu et al., 2020). Therefore, they themselves may be more alerted and bearable to those measures.

It is simultaneously important to quickly stifle the spread of the epidemic through various measures and be humane to the residents. In battling the COVID-19 pandemic, the Macao government demonstrated proactive, decisive and humane, placing human lives and public health as paramount interest over the economy as echoed by Chief Executive of Macao government: “The government has seen fiscal surplus for many years. It is time to spend that money. Money can be re-earned, but the health of the people is irrecoverable” (Bian et al., 2020). The top governor’s attitude is imperative in giving the confidence to residents, and in turn getting the residents’ understanding, cooperation and support.

In addition, the Macao government has adopted the extraordinary and creative strategies to supply enough affordable resources to the residents such as facial masks, disinfectants, and daily commodities during the pandemic. Furthermore, the public consultation hotline dedicated to engagement and communication of any queries or concerns from the residents. The abovementioned can also explain the positive perspectives on local anti-COVID-19 pandemic from majority of our participants.

However, some participants expressed their difficulties during the pandemic, such as the pregnancy following-up visits were interrupted, face-to-face health education was cancelled and so on. The similar problems were also reported by other researchers (Huang et al., 2020; Furuta, 2020; Ravaldi, 2020). Nevertheless, the online medical services might be a good alternative like a medical center in New York applied telemedicine to offer prenatal care during the epidemic outbreak (Aziz et al., 2020). This might be a good example for Macao health professionals to learn and to work out the appropriate strategies in coping with the epidemic emergency situation.

Psychological distress was another prominent experience experienced by pregnant women during the pandemic. All study participants expressed that the sudden outbreak of virus infection made them and their families feel nervous, anxious, and even fearful. Indeed, during this special and awful period, there were too many uncertainties. They worried about the risk of infection for themselves and the fetus, and were not sure what risks the pandemic bringing to the process of pregnancy and childbirth (Brooks et al., 2020). All these uncertainties increase their fears and anxiety (Rettie & Daniels, 2021). Biaggi and associates also state that even in the absence of a pandemic, pregnant women often feel the uncertainty and anxiety associated with childbirth and the arrival and care of newborn babies (Biaggi, Conroy, Pawlby, & Pariante, 2016). During the pandemic, reduced family income caused by the restriction measures also psychologically affect the pregnant women.

A study in Mainland China showed that the lower the monthly household income of pregnant women during the epidemic, the higher the detection rate of anxiety during pregnancy (Yan et al., 2021). Another study also found that low socioeconomic income is one of the most serious determinants of prenatal mental health problems for pregnant women (Fellenzer & Cibula, 2014). In addition, like many other countries and regions (Sahin et al., 2021; Huang et al., 2020; Bradfield et al., 2021), Macao has also imposed restrictions on hospital visits.

From the end of January to the end of May 2020, hospitals in Macao had suspended the paternity service, limited visitors to the postpartum ward and shortened the visiting time. Mothers have to face the process of childbirth alone, so that some interviewees said that the childbirth under the epidemic has caused a psychological shadow, which has a negative impact on future pregnancy and childbirth wishes. Therefore, further study is necessary to track the postpartum experiences of women and their special needs during the pandemic as WHO's guideline indicates women should be guaranteed their basic rights, and enabled them to obtain as many ideal childbirth experiences as possible (WHO, 2018).

Another notable finding is the family member's job also a significant stressor causing pregnant women's psychological distress during the pandemic. Police officer, firefighter, casino attendance, and health professional are all perceived as high-risk work contacting with the infections of COVID-19. The pregnant women are under tremendous psychological pressure if their family members, particular husband are working in this kind of job.

People always need information, however, constant exposure to too much; particularly unpleasant information might cause psychological distress and irritability (Begum MR, Ehsan N, Ehsan M, Sharif AB., 2020). Advanced information technologies offer people multiple means such as Facebook, Weibo, WeChat, mobile pushes, and so on to receive huge information, but simultaneously overwhelm them, moreover the authenticity and reliability of the information are quite questionable. Some are exaggerated or biased, which mislead the public and cause the unnecessary panic and anxiety (Taylor, Asmundson, & Hyprochondria, 2004). A Chinese study showed that during COVID-19, the more pregnant women who pay attention to the epidemic every day, the higher the chance of anxiety during pregnancy (Yan et al., 2021). Therefore, it is necessary to educate residents how to screen the authenticity and reliability of the information.

Limitations

Due to the characteristics of qualitative study and COVID-19 epidemic, this study had some limitations. First, although the study followed the principle of maximum differentiation to select interviewees, the selected participants might not be able to represent the experiences of all pregnant women who had experienced the first wave of the epidemic in Macao. Second, through telephone interviews, interviewer could not observe and record the facial expressions

of interviewees, so some emotional information might be lost. Moreover, the interview was conducted between November and December 2020 that means six to ten months of severe epidemic time had already passed in Macao, the interviewees recalled their experiences, which might inevitably have some recalling bias.

Conclusions

The COVID-19 epidemic and the anti-measures impact human being and affect all aspects of people's lives, particular those vulnerable group such as pregnant women. The present study demonstrated that the majority of participants generally perceived all implemented measures were necessary and effective. They also showed the cooperative and positive attitudes to the government's anti-epidemic policy. Nevertheless, there are some aspects need to be improved, which requires continuous efforts collectively from the government, community and health professionals.

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References

Alfaraj S.H., AlTawfiq J.A., & Memish Z.A. (2019). Middle East Respiratory Syndrome Coronavirus (MERS-CoV) infection during pregnancy: Report of two cases & review of the literature. *J Microbiol Immunol Infect., 52*(3), 501-03. https://doi.org/10.1016/j.jmii.2018.04.005

Atilgan, D. & Tukel, Y. (2021). Social capital and satisfaction with life during the COVID-19 pandemic: A case study on coaches. *International Journal on Social and Education Sciences (IJonSES), 3*(2), 342-359. https://doi.org/10.46328/ijonses.185

Atkinson, J.D. (2017). Journey into Social Activism: Qualitative Approaches. Publisher: *Fordham University Press*, 65-98.

Aziz A., Zork N., Aubey J.J., Baptiste C.D., D'alton M.E., Emeruwa U.N., et al. (2020).Telehealth for high-risk pregnancies in the setting of the COVID-19 pandemic. *Am J Perinatol*. *37*(8), 800. https://doi.org/10.1055/s-0040-1712121

Batmang, B., Sultan, M., Azis, A., & Gunawan, F. (2021). Perceptions of Pre-Service Teachers on Online Learning during the COVID-19 Pandemic. *International Journal of Education in Mathematics, Science, and Technology (IJEMST), 9*(3), 449-461.

Begum M.R., Ehsan N., Ehsan M., & Sharif A.B. (2020). Pregnancy and Childbirth in COVID-19Positive/Probable and Suspected Patients: A Comprehensive Review. *J. Bangladesh Coll. Phys. Surg. 38*, 91-108. https://doi.org/10.3329/jbcps.v38i0.47443

Biaggi A., Conroy S., Pawlby S., & Pariante CM. (2016). Identifying the women at risk of antenatal anxiety and depression: a systematic review. *J Affect Disord., 191*, 62-77. https://doi.org/10.1016/j.jad.2015.11.014

Bian, X.N., Yao, L., & Bian, Y. (2020). Effective COVID-19 prevention and control in areas of ultra-dense population: Lessons from Macau SAR. *J Clin Intensive Care Med, 5,* 22-25. https://doi.org/10.29328/journal.jcicm.1001031

Biviá-Roig G., La Rosa V.L., Gómez-Tébar M., Serrano-Raya L., Amer-Cuenca JJ., Caruso S., et al. (2020). Analysis of the impact of the confinement resulting from COVID-19 on the lifestyle and psychological wellbeing of Spanish pregnant women: an Internet-based cross-sectional survey. *Int J Environ Res Public Health, 17*(16), 5933. https://doi.org/10.3390/ijerph17165933

Bradfield Z., Hauck Y., Homer C.S., Sweet L., Wilson A.N., Szabo R. A., et al. (2021 March). Midwives' experiences of providing maternity care during the COVID-19 pandemic in Australia. *Women and Birth.* [cited 2021 May 25]. Retrieved from: https://doi.org/10.1016/j.wombi.2021.02.007

Brooks S.K., Webster R.K., Smith L.E., Woodland L., Wessely S., Greenberg N., et al. (2020). The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *The lancet, 395*(10227), 912-920.

Brooks S.K., Weston D., & Greenberg N. (2020). Psychological impact of infectious disease outbreaks on pregnant women: Rapid evidence review. *Public Health, 189*, 26-36.

Chan J, Yuan S, Kok K., et al. (2020). A familial cluster of pneumonia associated with the 2019 novel coronavirus indicating person-to-person transmission: a study of a family cluster. *Lancet, 395*(10223), 514-523. https://doi.org/10.1016/S0140-6736(20)30154-9

Chen H., Guo J., Wang C., Luo F., Yu X., Zhang W., et al. (2020). Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records. *The lancet, 395*(10226), 809-815. https://doi.org/10.1016/S0140-6736(20)30360-3

Constandt B., Thibaut E., De Bosscher V., Scheerder J., Ricour M., & Willem A. (2020). Exercising in times of lockdown: an analysis of the impact of COVID-19 on levels and patterns of exercise among adults in Belgium. *Int J Environ Res Public Health, 17*(11), 41-44. https://doi.org/10.3390/ijerph17114144

Fellenzer J.L., & Cibula D.A. (2014). Intendedness of pregnancy and other predictive factors for symptoms of prenatal depression in a population-based study. *Matern Child Health J.*, *18*(10), 2426-36. https://doi.org/10.1007/s10995-014-1481-4

Furuta M. (2020). 2020 International Year of Midwifery—In the midst of a pandemic. *Midwifery. 87*, 102739. https://doi.org/10.1016/j.midw.2020.102739

Government of Macau Special Administrative Region, Statistics and Census Service. Tourism Statistics. (2020). [cited 2021 May25]. Retrieved from: http://dsec.gov.mo.

Hebebci, M. T. (2021). The Bibliometric Analysis of Studies on Distance Education. *International Journal of Technology in Education (IJTE), 4*(4), 796-817. https://doi.org/10.46328/ijte.199

Hebebci, M. T., Bertiz, Y., & Alan, S. (2020). Investigation of Views of Students and Teachers on Distance Education Practices during the Coronavirus (COVID-19) Pandemic. *International Journal of Technology in Education and Science (IJTES), 4*(4), 267-282.

Huang M., Qiu Y., Hu Q., Bian B., Wang Z., Wang Z., et al.(2020) .Analysis on prevention and control measures and medical resources of obstetrical hospital during the epidemic period of COVID-19 in Guangdong Province. *J of Prac Med., 36*(10), 1277-81. https://doi.org/10.3969/j.issn.1006-5725.2020.10.003

Huang Y., & Zhao N. (2020). Generalized anxiety disorder, depressive symptoms and sleep quality during COVID-19 outbreak in China: a web-based cross-sectional survey. *Psychiatry Res., 288*, 112954. https://doi.org/10.1016/j.psychres.2020.112954

Kara, S. (2021). An Investigation of Visual Arts Teachers' Attitudes towards Distance Education in the Time of COVID-19. *International Journal on Social and Education Sciences (IJonSES), 3*(3), 576-588. https://doi.org/10.46328/ijonses.246

Khoury J.E., Atkinson L., Bennett T., Jack S.M., Gonzalez A. (2021). COVID-19 and mental health during pregnancy: The importance of cognitive appraisal and social support. *J Affect Disord., 282*, 1161-69. https://doi.org/10.1016/j.jad.2021.01.027

Kibici, V. B. (2021). Analysis of Music Teachers' Job Satisfaction and COVID-19 Anxiety Levels. *International Journal on Social and Education Sciences (IJonSES), 3*(4), 752-767. https://doi.org/10.46328/ijonses.275

Lio, C.F., Cheong, H.H., Lei, C.I., Yao, L., Lam, C., & Leong, I.H. (2021). Effectiveness of personal protective health behaviour against COVID-19. *BMC Public Health*, *21*(827), 1-10. https://doi/org/10.1186/s12889-021-10680-5.

Maksum, H. & Purwanto, W. (2022). The Development of Electronic Teaching Module for Implementation of Project-Based Learning during the Pandemic. *International Journal of Education in Mathematics, Science, and Technology (IJEMST), 10*(2), 293-307.

Mapa I., Distefano F.A., & Rizzo G. (2020). Effects of coronavirus 19 pandemic on maternal anxiety during pregnancy: a prospectic observational study. *J Perinat Med.*, *48*(6), 545-550. https://doi.org/10.1515/jpm-202000182

Moccia L., Janiri D., Pepe M., Dattoli L., Molinaro M., De Martin V., et al. (2020). Affective temperament, attachment style, and the psychological impact of the COVID-19 outbreak: an early report on the Italian general population. *Brain Behav Immun., 87*, 75-79. https://doi.org/10.1016/j.bbi.2020.04.048

Rasmussen S.A., Smulian J.C., Lednicky J.A., Wen T.S., & Jamieson D.J. (2020). Coronavirus disease 2019 (COVID-19) and pregnancy: what obstetricians need to know. *Am J Obstet Gynecol., 222*(5), 415-426.

Ravaldi C., Wilson A., Ricca V., Homer C., & Vannacci A. (2020). Pregnant women voice their concerns and birth expectations during the COVID-19 pandemic in Italy. *Women and Birth., 34*(4), 335-343. https://doi.org/10.1016/j.wombi.2020.07.002

Restuati, M., Nasution, M. Y., Pulungan, A. S. S., Pratiwi, N., & Safirah, B. (2021). Improvement Efforts for Student Learning Outcomes and Motivation using Edmodo during the COVID-19 Pandemic. *International Journal of Education in Mathematics, Science, and Technology (IJEMST), 9*(4), 614-624.

Rettie H., & Daniels J. (2021). Coping and tolerance of uncertainty: Predictors and mediators of mental health during the COVID-19 pandemic. *Am Psychol., 76*(3), 427–37.https://doi.org/10.1037/amp0000710

Sahin B.M., & Kabakci E.N. (2021) .The experiences of pregnant women during the COVID-19 pandemic in Turkey: A qualitative study. *Women and Birth., 34*(2), 162-169.

Sanyaolu, A., Okorie, C., Hosein, Z., Patidar, R., Desai, P., & Prakash, S. etc. (2020). Global Pandemicity of COVID-19: Situation Report as of June 9, 2020. *Infectious Diseases: Research and Treatment,* 14: 1–8.https://doi.org/10.1177/1178633721991260

Shorey S., & Valerie C. (2020). Lessons from past epidemics and pandemics and a way forward for pregnant women, midwives and nurses during COVID-19 and beyond: A meta-synthesis. *Midwifery,* (90), 102821. https://doi.org/10.1016/j.midw.2020.102821

Subbaraman, N. (2021). How does COVID affect mother and baby? *Nature,* 591, 11 March: 194-195.

Taylor S., Asmundson G.J., & Hyprochondria. (2004). *Treating health anxiety: A cognitive-behavioral approach.* New York: Guilford Press.

United Nations, Department of Economic and Social Affairs, Population Dynamics. World Population Prospects. (2020). [cited 2021 May25]. Retrieved from: https://population.un.org/wpp/Download/Standard/Population/

Usher K., Bhullar N., & Jackson D. (2020). Life in the pandemic: Social isolation and mental health. *J Clin Nurs.,* (29), 2756–2757. https://doi.org/10.1111/jocn.15290

Voitsidis P., Gliatas I., Bairachtari V., Papadopoulou K., Papageorgiou G., Parlapani E., et al. (2020). Insomnia during the COVID-19 pandemic in a Greek population. *Psychiatry Res.,* 289, 113076. https://doi.org/10.1016/j.psychres.2020.113076

Wong S.F., Chow K.M., & Swiet M. (2003). Severe acute respiratory syndrome and pregnancy. *BJOG., 110*(7), 641-642. https://doi.org/10.1046/j.1471-0528.2003.03008.x

World Health Organization. (2020). *Statement on the second meeting of the International Health Regulations (2005) Emergency Committee regarding the outbreak of novel coronavirus (2019-nCoV).* [cited 2021 May 20]. Retrieved from: https://www.who.int/news/item/30-01-2020-statement-on-the-second-meeting-of-the-international-health-regulations-(2005)-emergency-committee-regarding-the-outbreak-of-novel-coronavirus-(2019-ncov)

World Health Organization. (2018). *WHO recommendations on intrapartum care for a positive childbirth experience. World Health Organization*. [cited 2021 May 25]. Retrieved from https://books.google.com/books?hl=zh-CN&lr=&id=hHOyDwAAQBAJ&oi=fnd&pg=PR5&ots=edyoTjCtVf&sig=3nIwu6d_l6t6WUOgXSDWb-Ipi-k#v=onepage&q&f=false

World Health Organization. (2020).*World Health Organization (2020) WHO Director-General's remarks at the media briefing on 2019-nCoV on 11 February 2020*. [cited 2021 May 20]. Retrieved from: https://www.who.int/director-general/

speeches/detail/who-director-general-s-remarks-at-the-media-briefing-on-2019-ncov-on-11-february-2020

Wu Y., Zhang C., Liu H., Duan C., Li C., Fan J., et al. (2020). Perinatal depressive and anxiety symptoms of pregnant women along with COVID-19 outbreak in China. *Am J Obstet Gynecol., 223*(2), 240.e1-e9. https://doi.org/10.1016/j.ajog.2020.05.009

Yan D., Yuan J., Yan H., Liu T., Wang F., & Tian M. (2021). Effect of COVID-19 Epidemic on Pregnant Women's Anxiety during Pregnancy. *Int J Gynaecol Obstet., 48*(1), 110.

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Chapter 4 - The Implementation of Scientific Approach in Indonesian Language Course Tutorial for Students of 2019 Remote Learning Program Unit at Open University

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Chapter Highlights

- This research aims at describing lecturer's planning, implementation, obstacles and attempts in implementing scientific approach through Indonesian Language teaching and learning for studentsof Remote Learning Program Unitof Open University of Purwokerto.
- This research used a descriptive qualitative design. The data were collected using documentation, observation, and interview. The data were then analyzed by reducing, classifying and presenting them, and finally drawing conclusions. The subjects in this research were studentsof Remote Learning Program Unitat Open University of Purwokerto.
- The research resultsindicated that (1) during the tutorial lesson planning, the main activities of scientific approachwere planned in the component of steps of Indonesian Language course learning, (2) during the tutorial lesson implementation, the main activitiesof scientific approachwere seen in the teaching and learning activities and they were implemented in eight meetings, (3) during the learning evaluation, the assessment covered knowledge and skill aspects, and (4) the obstacles encountered by tutorswere how the time allocated and the lesson material coverages did not match each other, and the examples given in students' handbook are less contextual.
- Based on the findings, it is suggested for all learning group administrators to use this research as a source of theories related to scientific approachin language teaching and learning. It is also suggested for Tutors to be more careful, creative and innovatif in preparing RAT and SAT for Indonesian Language course.

Introduction

Education is an integral part of development. Education processes cannot be separated from the processes of development itself. Development is directed and aims at developing high-quality human resources. To turn Indonesians into high-quality humans have been explicitly referred to in the national education goals. Whether or not an individual successfully complete their formal education at higher education institutions highly depend on the teaching and learning activities, i.e. the integratedness between lecturers and students' activities. Lecturers as educators who have to directly face students are obliged to keep on improving their professional competence to optimize their teaching and learning processes.

Lecturers are expected to understand everything related to the existence of students, including their interests, attitude, emotional development and cultural environment. Considering the importance of competence, attitude, knowledge and skills, the demanded language proficiency should be formed through a sustainable teaching and learning. It begins with improving their knowledge on the types, rules and context of a text, and followed by the skill of presenting both planned and spontaneous "written texts" and "oral texts", and eventually to the formation of "politeness attitude" and "language" thoroughness and appreciation to Indonesian language as the national cultural heritage (Nuh, in Majalah Pendidikan, Bahasa, Sastra, dan Budaya, 2013: 9).

Furthermore, as a circular letter is issued by the Directorate General for Higher Education of the Ministry of Education and Culture which requires all higher education graduates from S-1, S-2 to S-3, to publish a scientific paper (final project, thesis, or dissertation) as a requirement for their graduation, the writing culture among university students should be improved. Based on the observation made by the researcher, a conclusion could be drawn that the scientific articles produced by students are still low. It can be acknowledged that writing skills cannot be produced in an instant. The writing skills for the purpose of publication constitute a lengthy process. A writer needs to have some important requirements to create a good writing, namely knowledge, courage, experience, and inspiration (Saubas, 2016).

Language plays an important role as a means to express feelings and thoughts aesthetically and logically. Muhamad Nuh suggests that someday, language will be demanded to be able to express something in such a beautiful way that it can move the readers/hearers' feeling.

However, at some other point, language can also be conveyed objectively and logically to allow readers/hearers to swallow easily. It is these two approaches to expressing two dimensions of oneself, feeling and thoughts, through language that need to be balanced.

Indonesian language course teaching and learning aims to enable (someone) to actualize their ideas on phenomena or issue conditions related to knowledge, technology, and culture they are studying. These teaching and learning are focused on proficiency in using languages correctly, clearly, effectively, and matching the function of Indonesian language as a means for self-expression, communication, "integrity, and adaptation as well as social control (Saubas, 2016).Students are demanded to be able to master every discipline. They need to be able to adapt themselves with today's needs, to be ready-to-use, ready-to-work, and well-prepared to get to the real battlefield in the community. In addition to having to be smart and literate for making rhetoric, processing words which can be delivered orally to the public, they have to be capable of conveying their aspirations, ideas, and views through written media.

Social media, either printed or electronic, in Indonesia give a lot of changes to students to write. There are more than enough newspapers issued at local and national levels which prepare rubrics in which students can participate. Students' articles in social media usually accentuate idealism. Many students' articles promote students' activeness to be agents of change or highlight and criticize something related to political, social, educational, cultural, and legal development aspects which they see not as what the community expect them to be. This surely can attract readers with the opinions written by these students.

In terms of their reading and writing cultures, it must be admitted that Indonesians are so concerning. Since long ago, verbal culture has been more dominant than the written one in this country. People obtain and spread information using mostly oral utterances. It is indeed hard to change this culture which has been maintained since long ago, since it has something to do with the people's mindset which has been formed in such a way in a long run. According to Margaret Teacher, *knowledge is power and character is the more*, meaning it is from mindset that an utterance-action-habit-character will be reflected. The term character here means the reading and writing cultures which still need to be developed for students.

The current fact is that "Indonesian language course teaching" at our schools has not achieved satisfactory results. In Indonesia, we have LPTK (Educational Institution for Teaching Personnel), language curriculum keeps on changing and continuously updated, language textbooks are contested, assessed, and published via website for free (electronic school books), language and literary teachers are trained, nurtured, and their qualification is improved, yet the education outcomes of Indonesian language remain below the proper quality. It is quite unfortunate that the party in charge of it fails to plan and design "Indonesian language course teaching" as the mother tongue, second language, and foreign language, when we live in a multicultural and multilinguistic community (Kurniawan in Hidayat, 2009:27).

In relation to the explanation above, Kurniawan also states that "students' oral and written Indonesian language proficiency will strengthen the Indonesians' cultural resilience in the face of "foreign language" penetration in this globalization era. The current excessive use of foreign language is deemed as a result of globalization flow. It becomes a tremendous challenge in implementing "Indonesian language course teaching from schools to universities. Therefore, there is a need to redesign the "educational politic" and "Indonesian language course teaching" matters to make Indonesian language more dignified and having more national identity (Hidayat, 2009:27).

Highlighting this phenomenon, the education world should be in the frontline to promote the writing and reading culture to a higher level. Once this writing culture is formed in the education world, we ought not to be surprised and challenged anymore when there is a requirement to make a paper, including making a scientific paper worth publishing in scientific journal as has recently been required. This has been a hot topic in all universities and colleges alike in Indonesia, i.e. that an undergraduate should have a paper (Winarsih, 2016).

The general compulsory course (MKWU) Indonesian language which is required for any student to take can actually be a solution to deal with the matter. With its 3 credit weights, Indonesian Language course can equip students with four aspects of language, namely listening, speaking, reading, and writing. At university student level, the writing skill aspect should receive greater portion, with writing practice be it articles, papers, or other scientific writings until it reaches the publication stage.

In MKWU Indonesian language course teaching and learning, some obstacles are found to come from the lecturers. Based on the researcher's observation, those lecturers in charge of MKU Indonesian language course (1) lack creativity in giving writing assignments, (2) lack creativity in selecting the teaching and learning materials which demand students to be actively writing scientifically, (3) do not plan, manage, and evaluate their MKU Indonesian language course teaching and learning effectively and optimally, and (4) lack the ability to "gear up" students during their MKWU Indonesian language course teaching and learning.

Scientific approach is applying that someone does not merely absorb theories deductively through learning/literature review, rather he/she can also empirically verify them inductively through both practices and observation in the field. Thus, the effective way of learning is by combining theories and practices, combining deductive and inductive reasoning so that adequate learning experience (sensory motor) is acquired. This is what the researcher choose to be applied in the MKU Indonesian language course teaching and learning to allow students to directly practice to produce papers and to make writing a culture among students. This is what drives the researcher to conduct a study entitled "The Implementation of Scientific Approach in Indonesian Language Course Tutorial for Students of Open University in 2019".

Method

Scientific Approach

In general, the term approach is defined "to close the distance". According to Musfiqon (2015:51), approach is a basic concept which accommodates, inspires, strengthens, and grounds the thoughts on how a teaching and learning method is applied based on certain theories (Abidin, 2016:110). In the teaching world, it is more appropriate to define this word as *a way of beginning something*. Based on this definition, approach serves the function of a basic guideline on teaching something and how this something can be learned easily. Thus, approach can be defined as the basic concept which guides the way to teach something.

Hence, when it is translated, *approach* is a way to start something. In this case, it is the way to start "language teaching". More broadly, it is a set of assumptions on the essences of language, language teaching, and language learning processes. Meanwhile, scientific means of science in nature, in terms of knowledge or based on knowledge. Therefore, scientific approach can be defined as the basic concept which serves as the guideline to teach

something scientifically. Kemendikbud gives its own conception, i..e. that scientific approach is the teaching and learning approach carried out through such processes as observing, questioning, experimenting, associating, and communicating.

Scientific Approach Steps

1. Observing: Priyatni (2014:97) in Safitri Nur (2018) suggests that observing requires the availability of real objects. Without any object, the observing activity cannot be done. Likewise, Abidin (2016:133) states that observing is highly helpful in fulfilling students' curiosity to make teaching and learning processes highly meaningful. By observing, students find facts that there is a correlation between the analyzed object and the lesson materials.

2. Questioning: According to Priyatni (2015:97), questioning is the stage of limiting problems, formulating questions, and formulating temporary answers to these questions. Questions emerge after the observing activity is done seriously and carefully. This activity gives birth to perception on the object being observed. Abidin (2016:135) classifies the levels of question into lower and higher cognitive level as shown in Table 1.

Table 1. Classification of Questions as Lower and Higher Cognitive Levels

Level	**Sub-Level**	**Keywords**
Lower cognitive	Knowledge	• What... • Who... • When • Where... • Mention... • Match • Pair...
	Comprehension	• Explain.. • Distinguish... • Conclude • Change
	Application	• Use • Make

		• Prepare
Higher cognitive	Analysis	• Analyze • Identify
	Synthesis	• Predict • Arrange • Create
	Evaluation	• Gives your opinion • Compare

3. Experimenting: The Ministerial Regulation of Education and Culture (Permendikbud) Number 81a Year 2013 (2013:13) suggests that the follow-up of questioning is trying to explore and collect information from various sources using various methods. Thus, students can read more books, paying attention to phenonema or objects more closely, or even conducting an experiment. From these activities, some information will be gathered. In Abidin (2016:140), it is stated that to obtain real learning outcomes, students should try or perform experiment, particularly for the relevant materials or substances.

4. Associating: Priyatni (2015:98) suggests that associating is the process of logical and systematic thinking of empirical observable facts to draw conclusions in the form of knowledge. Two of the important activities in associating are analyses and assessments. Analysis is performed by seeing the similarities and differences, analyzing their compatibility and incompatibility, and identifying the correctness of the questions. Meanwhile, Abidin (2016:139) suggests that the Indonesian term “menalar” in teaching and learning context in 2013 curriculum with scientific approach is equivalent with “associating” rather than “reasoning” despite the same meaning the two terms have. The term association in teaching and learning refers to the ability to classify various ideas and associating various events to be inserted as memory fragments.

5. Networking: Priyatni (2015:99) states that the networking step demand students to present their comprehension result of a concept/theme orally or in written. The activities which can be done are by presenting their experiment report, presenting a conceptual map, and so on. This is not too different from what Abidin (2016:141) who states that at the final step is the ability to deliver the results of what they have done both orally and in written. In this case,

students should be capable of writing and speaking communicatively and effectively. Meanwhile, in Permendikbud Number 81a Year 2013 (2013:14), networking means writing or telling what have been found in the information-seeking, associating and pattern-finding activities. This result is delivered in the classroom and assessed by teachers as the student or the group of students' learning outcomes

Indonesian Language

Various assumptions existing in a language as suggested by Anthony with his Aural – Oral approach are as follows.

1. ***Assumption on Language***

   (1) Language only exists in human, namely *Aural-Oral* and symbolically it has meanings;

   (2) Every language has its own structure. No two languages have the exact same structure; and

   (3) a language's structure can be identified, used, and depicted systematically despite its possible description depending on its level and purpose.

   As a result of this assumption that language is *Aural – Oral,* utterance can be deemed as the first manifestation, meanwhile "written language" is considered as the second manifestation. Written language exists due to utterance existence *(Aural –Oral)*.

2. ***Assumption on Language Teaching and Language Learning Process:***
   a. The *Aural – Oral* aspect should be taught to students prior to teaching the reading and writing aspects. Understanding oral language is more successful before conversing teaching is given. Hence, it should be taught before speaking;
   b. In certain case, reading serves as the *first* step for learning writing since writing symbols should be able to be seen first before it is written or according to reception-production rule;
   c. Other language uses which can be seen as the *third* phase *(first phase Aural – Oral* and *second phase* reading and writing), such as literary and language arts, should also be taught based on reception-production rule;
   d. Language is a habit. Habit is earned by making an action repeatedly. Thus, in some cases, language should be taught through repetition; and

e. Each language has its own structure. Therefore, students' language can be compared with the language to be taught to identify materials which may lead to difficulties for students.

In relation to the explanation above, Subana and Sunarti (tt) suggest that the term *approach* is frequently defined as *method* and *technique.* These terms are three interrelated aspects, one is tightly related with others. In *Longman Dictionary of Applied Linguistics, Richards* et al., discuss these three aspects with a description as "Teaching language is frequently discussed in *three aspects* which relate one another, namely "approach, method, and technique". Different theories on the essence of language and the ways to teach it (approach) imply different ways in teaching language (method) and different methods can utilize different classroom activities (technique).

Pranowo (1996: 18) suggests that "approach" constitutes the philosophical background regarding the subjects to be taught. For example, it can be said that **"***Aural-Oral* approach**"** in learning a language is based on the assumptionthat language is a meaningful and natural sound symbol of language. Every language is specifically structured. The language structure can be found and described systematically. Pranowo (1996: 62-63) also reveals that the term "approach" has different definitions. Anthony (1963 in Pranowo, 1996:62-63) suggests that "approach" is a set of interrelated assumptions which has something to do with "language nature," "language teaching," and "language learning". Approach is the philosophical background regarding the subject to be taught. For example, *Aural – Oral* can be said as an approach since it has the following assumptions on language: (1) Language as a meaningful and natural sound symbol; (2) Every language has a specific structure, and (3) Language structure can be found and described systematically.

Research Methods

The method used in this research was the descriptive qualitative one. The research data were described based on the existing phenomena, be it natural or man-made ones (Sukmadinata, 2009: 72). The study was conducted by analyzing the Indonesian Language course tutorial activity using scientific approach for UPBJJ students of UT Purwokerto.

The main technique used in this research was content analysis by reading and interpreting repeatedly. It was then integrated with analysis and interpretation from many sources. The main instrument was the researcher assisted with instrument guideline of observation, interview, documentation and notes used for recording data finding from the identification, integration, and interpretation. The collected data were analyzed in a descriptive qualitative manner so that a description on the implementation of scientific approach in Indonesian Language course tutorial for students of Remote Learning Program Unit at Open University of Purwokerto could be discovered.

Result

The analysis of data on the implementation of scientific approach in Indonesian language course tutorial for students of Remote Learning Program Unit at Open University of Purwokerto showed that the application of scientific approach was seen in teaching and learning steps. At the teaching and learning planning, the Indonesian Language course tutor for UPBJJ student class at UT Purwokerto used RAT SATwhich had been developed by the Ministry of Research and Technology and Higher Education (Kemenristekdikti) as a guideline to prepare RAT and SAT. Later, the Remote Learning Program Unit tutor at Open University of Purwokerto prepared RAT SAT in accordance with BB03-PK05-RII.28-Juli-2017. At the teaching and learning implementation stage, the tutor applied the scientific approachin the teaching and learning steps, particularly in the teaching and learning core activities.

The main activities in scientific approach, which were observing, questioning, experimenting, associating, and communicating, could not be completely implemented in one meeting due to the limited time and students' unequal ability in absorbing the lesson materials. The Indonesian language course teaching and learning evaluation based on scientific approach according to 2013 Curriculum was performed by teachers in one meeting. The teaching and learning evaluation was carried by measuring students' knowledge and skill aspects. The obstacles encountered by tutors in applying Indonesian Language course tutorial based on scientific approach for non-Primary Education students of Remote Learning Program Unit at Open University of Purwokerto were the inadequate available time to cover the lesson materials, students' ability in absorbing the materials, and the irrelevant examples presented in students' handbook with their surrounding environment.

Based on the research result, it was found that some components of RAT and SAT did not suit the RAT SAT model based on BB03-PK05-RII.28-Juli-2017. The tutor together with the administrator of Remote Learning Program Unit at Open University of Purwokerto developed some RAT and SAT components. The tutor added theme and sub-theme components as a development of the main material components. The tutor added these theme and subtheme to avoid mistakes while teaching since the lesson plan made by the teacher for each subject could be more than one. In addition, adding the theme and subtheme component was intended to make the course identity clearer. This theme and subtheme component addition was in accordance with Permendikbud Number 65 Year 2013 concerning Process Standards which ascertained that the course identity component was not only in the form of the course name, rather it could also be equipped with subject, theme, and subtheme.

The next difference was that the core competences (KI) had not been completely included in RAT and SAT. The tutor had tried to include the formulation of the four Kis since these KIs had been reflected in the basic competence (KD) formulation. Ideally, KIsare included as the initial component in RAT/SAT preparation since KIs served as the organizing element of Basic Competence (Kemdikbud, 2013). As an organizing element, core competencesbound vertical and horizontal organizations of basic competences. The vertical organization of basic competences was the interrelatedness between the basic competence contents of a class or education level to a class/level above it so that it met the learning principle, i.e. continuous accumulation between contents learned by students. The horizontal organization was the interrelatedness between basic competence contents of a course with the basic competence contents of different courses in one weekly meeting and the same class to enable a process of strengthening each other. Thus, thanks to the KIs included in the lesson plan, the basic competence formulation could be well-guided, since the core competences served as a guideline in integrating various basic competences.

The teaching and learning objectives formulated by the tutor in the RAT/SAT addressed the attitude, knowledge, and skill aspects. The teaching and learning objectives formulated by the tutor had been consistent with the basic competences developed, i.e. including attitude, knowledge, and skill aspects. Therefore, the teaching and learning objectives were formulated to address the three aspects. This was not consistent with the RAT/SAT samples since in the RAT/SAT samples based on BB03-PK05-RII.28-Juli-2017, the teaching and learning objective formulation only addressed two aspects, namely knowledge and skills aspects since

the attitude aspects (KI 1 and KI 2) were indirect teaching and learning and, hence, the indicators and objectives of teaching and learning were integrated in KI 3 and KI 4. Indirect teaching and learning were the educational processes occurring during the direct teaching and learning processes, yet they were not designed in a specific activity. The indirect teaching and learning dealt with the development of values and attitudes (Permendikbud Number 81A Year 2013 concerning Curriculum Implementation).

The tutor did not include the teaching and learning method to be used in the teaching and learning processes. Teachers only include the approach to be used, i.e. scientific approach. This was done by the tutor since, the tutor said, teaching and learning method was situational in nature, meaning it developed along with the situation. Ideally, in every teaching and learning a teaching and learning method to be used by teacher should be included to realize a conducive learning atmosphere and teaching and learning process for students to achieve basic competences which were matched with the students' characteristics and the basic competences to be achieved.

Another prominent thing in RAT and SAT prepared by the tutor was the absence of time allotment for each teaching and learning activity, be it the introduction, core activity, and concluding activity. The tutor argued that when the teaching and learning was implemented later, the time was allotted depending on the condition when the teaching and learning was in progress. The tutor should still paid attention to the time allotment for each teaching and learning activity, to prevent the time allotment from being too limited and eventually the teaching and learning was not too effective. This was in accordance with Permendikbud Number 65 Year 2013 concerning Process Standards and this implied the importance of paying attention to time allotment for each teaching and learning activity. Time allotment should be adjusted with the need for achieving KD and learning loads by considering the amount of course times available in the syllabus and the KD to be achieved.

Another finding in the lesson plan prepared by the tutor was the different assessment structure. The assessment was structured by the teacher based on the process assessment and result assessment. The tutor argued that the process assessment was about students' attitude while attending the teaching and learning processes hence the tutor classified KI 1 and KI 2 into the process assessment, and the result assessment was about students' ability and skills in absorbing the lesson materials, thus the tutor classified KI 3 and KI 4 into learning outcome

assessment. This was not consistent with Permendikbud Number 66 Year 2013 concerning Assessment Standards which suggested that students' learning outcome assessment included their attitude, knowledge, and skill competences and it was done in a balanced and stand-alone way so that it could be used to determine each student's relative position against the predetermined standards.

In relation to the teaching and learning implementation stage, the tutor did not completely execute the teaching and learning steps based on the RAT/SAT which had been prepared. The scientific approach steps were not entirely implemented in one meeting due to the time available and students' ability in digesting the lesson materials. This was not consistent with the essence of teaching and learning core activities based on scientific approach which emphasized that the teaching and learning core activities based on scientific approach constituted teaching and learning processes to achieve goals, done in an interactive and inspiring, amusing and challenging way, and motivated students to be active to be information seeker, as well as providing enough space for initiative, creativity, and independence according to students' talents, interests and physical and psychological development through five main activities, namely observing, questioning, experimenting, associating, and communicating (Permendikbud Number 81A Year2013 concerning Curriculum Implementation). The concluding activity performed was not consistent with RAT/SAT. The teacher only gave assignment as a follow-up in the teaching and learning activities.

The evaluation stage of Indonesian language course teaching and learning was done by the tutor in three meetings to monitor students' learning development with a hope that the evaluation could be done optimally. Students had enough time to work on the evaluation questions. The tutor of Indonesian Language course for students of Remote Learning Program Unit at Open University of Purwokertoonly made the learning outcomes assessment which measured students' knowledge and skill aspects and process assessment.

The assessment in the tutorial for every course included penilaian attitude competence (KI 1 and KI 2), knowledge competence (KI 3), and skill competence (KI 4). The attitude assessment included the assessment of students while attending the teaching and learning processes. This attitude assessment was carried by observing students' behavior in attending the lesson. The learning outcome assessment included assessment on students' ability in

absorbing the lesson and their ability in applying the lesson materials they had received. The assessment for knowledge and skill competences used 1–4 scale (0.33 multiple), and the attitude competence used such scales as Excellent (SB), Good (B), Enough (C), and Poor (K), which could be converted into A –D Predicates.

Some obstacles encountered by the tutor in the Indonesian Language course tutorial based on scientific approach was the adequacy between the available time and the lesson materials. At higher education level, time allotment for one learning hour was 60minutes. Indonesian language course received a time allotment for 2 x 60 minutes for one meeting, thus it is hard to accomplish the too-wide material coverage. Another obstacle the tutor encountered was that the examples provided in students' handbook was not contextual, thus it made it hard for students to understand the lesson delivered. Therefore, the tutor ought to find other examples which were more relevant with students' surrounding conditions to allow them to understand the lesson materials better.

Conclusion

Based on the problems proposed and the results of study on the Indonesian Language course tutorial activity with scientific approach for students of Remote Learning Program Unit at Open University of Purwokerto, the following conclusions could be made:

(1) The planning of Indonesian Language course tutorial using scientific approach for non-Primary Education students of Remote Learning Program Unit at Purwokerto indicated that the scientific approach activity was planned in the component of teaching and learning steps.

(2) The implementation of Indonesian language course teaching and learning using scientific approach for students of Remote Learning Program Unit at Open University of Purwokerto showed that the activity steps in the scientific approach, namely observing, questioning, experimenting, associating, and communicating were seen in the teaching and learning activities and implemented in eight meetings.

(3) The evaluation of Indonesian language course teaching and learning using scientific approach for students of Remote Learning Program Unit at Open University of Purwokerto was only learning outcome assessment including knowledge and skill assessments.

(4) The obstacles encountered by the teacher in applying the Indonesian language course teaching and learning using scientific approach for students of Remote Learning Program Unit at Open University of Purwokerto were the inadequacy of time to cover the lesson materials. The lesson materials were so complex and the available time was highly limited. Another obstacle was that the examples provided in students' handbook were not contextual, making it hard for students to absorb the lesson materials.

Based on the findings in this research, the suggestions the researcher would like to give through this research are as follows:

(1) It is suggested for educational institutions to use this research as a reference which can give a positive contribution to the development and advancement of knowledge, particularly in relation to the provision of theories on scientific approach in language teaching and learning.

(2) Tutors are suggested to be more careful, creative and innovative in preparing RAT/SAT. This carefulness includes KI and KD breakdowns to allow students to achieve these KIs and KDs. Additionally; teachers need to pay attention to time allotment for every teaching and learning activity, so that the five main steps in scientific approach can be implemented.

(3) The administrator of UPBJJ-UT Purwokerto ought to keep on continuously providing training, particularly on how to implement scientific approach in teaching and learning for tutors so that the implementation of scientific approach for every teaching and learning activity aspect in terms of the planning, implementation, evaluation designed by the teacher can be well-implemented. Also, supervisors from the education office are suggested to keep on monitoring the effectiveness and efficiency of teaching and learning activities made by teachers, particularly the consistency between teaching and learning planning and implementation.

(4) Further researchers are suggested to develop and conduct further study by expanding the problems and the research site.

References

Abidin, Yunus. 2016. *Desain Sistem Pembelajaran dalam Konteks Kurikulum 2013 [Learning Design System in the Context of 2013 Curriculum]*.Jakarta: PT Refika Aditama.

Kemendikbud. 2013. *Kurikulum 2013 Kompetensi Dasar Sekolah Menengah Pertama (SMP) Madrasah Tsanawiyah (MTs) [2013 Curriculum: Basic Competences for (Islamic) Junior High School]*. Jakarta: Kemendikbud [Ministry of Education and Culture].

Kemendiknas [Ministry of National Education]. (2012). Wawancara Mendikbud Kurikulum 2013 [An Interview with Minister of Education and Culture on 2013 Curriculum].Retrieved from http://www.kemdiknas.go.id/kemdikbud/wawancaramendikbud-kurikulum-2013-3.

Kurniawan, Khaeruddin. 2009. *Politik Pengajaran Bahasa Indonesia yang Bermartabat*. dalam H. Kosadi Hidayat, S. Anshori, dan Sumiyadi (ed)*[Dignified Indonesian Language Learning Politics in* H. Kosadi Hidayat, S. Anshori, ann Sumiyadi (ed)*]. Bahasa dan Sastra dalam Perspektif Pendidikan [Language and Literature in Educational Perspective]*. Bandung: Indonesian Language Education and Literature Department of Universitas Pendidikan Indonesia, Bandung.

Majalah Pendidikan Bahasa, Sastra, dan Budaya Widyawara Dinamis dan Profesional Nomor 1 Tahun XXIX 2013 [Language Education, Literature, and Culture of Dinamic and Professional Widyawara Magazine No. 1 Year XXIX 2013]. ISSN 2339-1081. *Bahasa danSastra Indonesia dalam GamitanKurikulum 2013[Indonesian Language and Literature Based on the 2013 Curriculum Approach]*. Surabaya: Universitas NegeriSurabaya.

Peraturan Menteri Pendidikan dan Kebudayaan Nomor 22 Tahun 2016 tentang Standar Proses Pendidikan Dasar danMenengah [Ministry of Education and Culture Regulation Number 22 Year 2016 on Primary and Secondary Educational Process Standards].

Peraturan Menteri Pendidikan dan Kebudayaan Nomor 81a Tahun 2013 tentang Implementasi Kurikulum [Ministry of Education and Culture Regulation Number 81a Year 2013 on Curriculum Implementation].

Pranowo.1996. *Analisis Pengajaran Bahasa untuk Mahasiswa Jurusan Bahasa dan Guru Bahasa [An Analysis on Language Learning for the Students of Language Department and Language Teachers]*. Yogyakarta: Gajah Mada Universitas Press.

Priyatni, Endah Tri. 2014. *Desain Pembelajaran Bahasa Indonesia dalam Kurikulum 2013 [Indonesian Language Learning Design in 2013 Curriculum]*. Jakarta: PT Bumikasara.

Safitri Nur Anita. 2018. *Implementasi Pendekatan Saintifik dalam Pembelajaran Menulis Teks Berita Kelas VIII SMP Negeri 1 Labakkang [The Implementation of Scientific approach in News Text Writing at Grade 8 of State Junior High School 1 Labakkang]*. Universitas Negeri Makasar 2018.

Saubas, Udin H. 2016. *Penerapan Pendekatan Saintifik dalam Pembelajaran Bahasa Indonesia Berbasis Teks di SMP [The Implementation of Scientific Approach in Indonesian Language Learning based on Texts at Junior High School]*. Riksa Bahasa Vol 2. No. 1 Year 2016.

Winarsih, Eni. 2016. *Penerapan Pendekatan Saintifik dalam Mata Kuliah Umum (MKU) Bahasa Indonesia untuk Menumbuhkan Budaya Menulis Mahasiswa IKIP PGRI Madiun [The Implementation of Scientific Approach in Indonesian Language General Course to Grow the students' Writing Culture at IKIP PGRI Madiun]*. Widyasastra.Vol 04, No 02. 2016.

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SECTION II - STUDIES ON EDUCATION SCIENCES

Chapter 5 - Learning Methods: Physical Education and the Relationship with the Learning Process during the COVID-19 Pandemic

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Chapter Highlights

- Effectiveness in a learning process requires real attention and support as an effort to achieve an educational goal.
- The research on difference in the Effect of Teaching Methods on Physical Education Learning Outcomes is expected to have a contribution to the COVID-19 Pandemic Period.
- Learning using video as an understanding can provide optimal influence in efforts to improve physical education learning outcomes and support the application of online learning during the COVID-19 Pandemic.
- The application of learning conditions during the COVID-19 pandemic can provide very significant benefits and effectiveness.

Introduction

The learning process in schools is a form of activity in which there is an educator or teacher and students or students, both of which are interrelated for the purpose of learning process activities in other words to create an effective learning atmosphere. Effective learning is a way to achieve educational goals, namely to educate the nation's life and develop Indonesian people as a whole. The opportunity to obtain a quality education is a desire that is shared by everyone when they participate in the educational process (Anwar 2015:621). Therefore, the learning process should be adapted to the conditions and needs of students. The learning process in schools is not only limited to one material or one subject, therefore schools are a place for students to learn and gain knowledge. Learning in schools is carried out in accordance with the applicable curriculum and is recognized by the State as a reference in implementing the learning process in schools. Students in schools carry out the learning process in accordance with the subjects contained in the curriculum, such as physical education which must be given to students to fulfill the national education goals, physical education is an integral part of overall education, and this means that physical education is an integral part of make education in general more important.

The physical education learning process often gets attention from various related parties. The smooth and successful learning process is a responsibility that is not light, requires special efforts in achieving goals and success in the learning process. The learning process in general is in accordance with ministerial regulations as outlined in the applicable curriculum in Indonesia. The various forms of learning that apply are the result of previous observations by experts in the field of teaching methods. The success or effectiveness of learning is actually supported by several aspects. In addition to supporting facilities in the school environment, or the role of a teacher who masters certain fields of knowledge in accordance with the material being taught. It is also important to understand the various strategies in teaching, the moves in teaching that are mixed or designed and then applied into a learning strategy that is expected to be able to provide a novelty or an optimal result in learning. Teaching strategies have been known by various terms such as teaching styles or teaching methods.

The teaching method certainly has a good purpose, as an effort to achieve the success of the education process in general which is packaged and developed into an appropriate teaching method for several existing materials or subjects. For example, in physical education subjects

that have a characteristic tendency in the realm of psychomotor or physical activity, student movements are controlled through methods in learning. Optimizing teaching methods is essentially the task of a teacher to create a learning atmosphere that is in accordance with the characteristics of students and the characteristics of their learning environment. Wherever students do learning, it is the duty of a teacher to create a conducive learning atmosphere. In addition, the characteristics of the subject matter are also a very basic reason for teachers to design learning methods. Based on this, to determine the learning method is not only based on one reason, but various reasons to create more enjoyable learning. Cultural differences are not the only reason for determining teaching methods (Hecht & Kahrens, 2021).

Learning methods or by other names that resemble them with the same goal in an effort to smooth the learning process of physical education, as in the book of teaching physical education by Moston which mentions the term teaching style. And there are still many books that explain and describe the form of teaching methods, especially physical education. The physical education learning process does not only focus on how children understand a material, but physical education is a form of subject that is said to be complete because it has characteristics by collaborating three domains, namely affective, cognitive and psychomotor which are the most dominant.

Each domain has a form of assessment that is arranged or designed in such a way that it can explain the results of student learning. In the cognitive domain as described below, the cognitive process of Bloom's taxonomy is a valid, reliable, efficient, and effective way of evaluating learning (Hackathorn et al., 2011). So most of the assessment processes in learning have certain benchmarks, in this case the cognitive process is a form of assessment that is said to be valid. So that in the learning process can not be separated from the cognitive realm. Learning in schools has the meaning of interaction between teachers and students. This is in line with the general education system. As explained below, the education system consists of several elements that support sustainability, including students, teachers, curriculum, administrators, specialists, technology, physical and financial resources. However, teachers are an important element, because the quality of education largely depends on the quality and competence of teachers (Ünal, 2017).

Seeing from the information above, it is clear that being a teacher, especially physical education, has a very big responsibility in educating students through physical education

movement learning. Physical education teachers must be able to modify the form of teaching methods or styles so that they are in accordance with the material to be taught, in this case the teacher must have the ability in addition to paying attention to the type of material it is deemed necessary to pay attention to the characteristics of students. Physical education is a subject that is usually given once a week, and is given in accordance with the learning implementation plan that has been prepared by the physical education teacher. Physical education implemented in schools is an educational process through providing learning experiences for students in the form of physical activities, playing, and exercising that are planned systematically and continuously to stimulate physical growth and development, motor skills, thinking skills, emotional, social, and moral.

Physical education learning has various characteristics following the various types of material in it, such as the material for big ball games, small balls, and so on. Physical education has material that requires students to be active. As is the case in floor exercise material, in which there are various components of complex motion, which consist of flexibility, strength, power, balance, agility and so on. Floor gymnastics in physical education learning is a branch or belongs to the category of artistic gymnastics which has varied motion components such as turning, rolling, jumping accompanied by a perfect landing without any additional movement or wobbling. This is in accordance with the notion that if the gymnast puts her feet together when landing, she can increase her stability by placing the center of gravity horizontally near the edge of the runway and positioning the center of gravity as low as possible (Marinsek & Cuk, 2010).

Learning physical education at the high school level, especially in floor exercise material, by looking at the diverse characteristics of students, it is very possible to use different teaching styles, in this case reciprocal teaching styles can be recommended as methods or teaching styles that can be applied in teaching teachers. In the reciprocal style, the responsibility for providing feedback shifts from the teacher to peers. This role shift allows for increased social interaction between peers and direct feedback.

In addition to the ability of the teaching style applied by the teachers in the teaching and learning process, students' psychological aspects are also needed in learning physical education, especially floor gymnastics. This psychological aspect is in the form of achievement motivation in learning physical education of floor gymnastics. Psychological

aspects are needed during the learning process of floor gymnastics because this type of sport includes a sport that is not easy and risky and of course has an impact on the possibility of sports injuries. Besides, the level of student achievement motivation affects learning achievement, especially in learning physical education in floor exercise material.

In gymnastics or physical education learning, floor exercise material in particular is very dominant in the ability to maintain balance in every movement. A person must have the ability to balance both statically and dynamically. It is important to maintain body balance and needs to be considered when learning movements and changing positions quickly (Atilgan, 2013). Gymnastics if studied has various benefits, returning to the benefits of exercise in general, explaining that exercise has benefits for maintaining physical condition in order to stay in top shape, maintaining an ideal body weight, minimizing the risk of various diseases and many more benefits of exercise in general. Here, in particular, gymnastics has almost the same benefits as the benefits of exercise in general, it's just that it is more specific and pays attention to the physical components that are affected. Gymnastics training can be a useful means to improve several aspects including physical function in children (Sheerin, Williams, Hume & Sport, 2012).

Gymnastics in physical education learning is a mandatory material that must be taught by physical education teachers and followed by students. Gymnastics is a mandatory part of the physical education curriculum (Kurnik et al., 2013). Gymnastics tends to put forward a very complex physical component that requires students to be more careful in carrying out physical education learning material for floor gymnastics, this is because it is very risky to get injured if you make movements incorrectly. The learning of floor gymnastics physical education at the high school level certainly leads to more material, but it does not have a very significant difference with the material at the junior high school level. Floor gymnastics can be said to be a type of material in physical education that has a high level of internal difficulty, and not even all students are able to perform a complete technique or movement, for example in the back roll movement which most students do not as smoothly as when doing the front roll movement .

The process of teachers teaching on floor exercise material for physical education learning often encounters several obstacles that are directly not realized so that the implementation of the learning process becomes less effective, such as when giving directions to students to do a

back roll movement where the teacher in giving instructions is less understood by students. This could be because the teacher lacks mastery of teaching methods or teaching styles. Or another possibility is that a teacher is less able to collaborate on several teaching styles that are in accordance with the character of the material and the students. The condition of facilities and infrastructure in each school is not the same, there are schools that have complete facilities and infrastructure and are supported by teachers who have good qualifications, there are also schools that have minimal facilities and infrastructure, so a teacher in this case is required to be more sensitive in Efforts to achieve the success of the physical education learning process in schools of course by paying attention to teaching methods that can foster student activity in motion and are able to develop the learning process as well as possible, in this case of course by modifying the game by adjusting the conditions and characteristics that exist in the school.

Physical education is generally a fun learning. If you pay attention, it is very rare for students to be less enthusiastic in participating in the physical education learning process, this proves that physical education is really a fun learning and is able to foster a sense of enthusiasm and develop various components that must be possessed by students. Physical education learning for floor gymnastics is often a teacher in providing learning more emphasis on the demonstration method or with a combination of command and exercise teaching styles. In the command and training style, the teacher's role is to be responsible or in full control of learning (Munusturlar et al., 2014).

Physical education learning that tends to involve physical movement really needs to be considered so that a teacher-centered teaching style is often needed. But it does not rule out the possibility of a combination of teaching styles to be one of the efforts to achieve more effective learning objectives. The commando teaching style if applied to learning as a whole will make students tend to be bored. Especially in physical education which mostly involves students' psychomotor. For the retention of acquired psychomotor skills in the guided discovery style, the child-centered teaching approach is superior when compared to the command-style teaching approach, which is teacher-centered (Arjunan, 2012).

Teaching styles or teaching methods in physical education learning have diversity so that in floor exercise material that requires students to be active in several components of physical movement, such as forward or backward roll movements, flexibility, and balance, the role of

teaching methods or teaching styles here very needed. In previous studies, it was stated that the style of command, training, and inclusion can affect the level of student involvement in physical education lessons (Sanchez et al., 2012). Physical education on floor exercise material will certainly be more interesting for students to follow if the teacher in providing learning is able to master the class with joy. Giving teaching methods with other variations such as a combination of teaching methods with video media will add to the attractiveness of students to like more so that from students liking a material it is hoped that it will be able to attract students' attention to better understand the various techniques being taught. In the future, students will be better able to practice combinations of movements in floor gymnastics based on understanding using videos.

Video is a medium that can be combined with teaching methods in physical education to achieve student understanding, or to make it easier for students to understand the material through the movements seen in the video, the video here is of course packaged into a good learning video, complete with instructions and types. the movements are written in full in the video, so that students in understanding do not do many questions that are still confused about a movement that is not clear. Physical education learning at the high school level is a more complex learning than the previous level, judging from the student's ability and level of understanding the student will certainly be better, so presenting teaching methods with video media is not a difficult thing, students are expected to receive learning fully spirit. Especially with the increase in electronic technology such as gadgets owned by students, of course, it becomes a tool that can also be used for learning which in this context uses videos that can be packaged into videos in students' communication devices.

Preliminary studies conducted explain that the selection of teacher teaching methods is sometimes less precise and less varied, causing boredom to students due to monotonous teaching methods. Utilization of technological advances is still relatively minimal so that the teaching style carried out is mostly still using the classical style or using the command style where the role is entirely on the teacher, and students become less active. In addition to using a commanding style, teachers often use training methods in conveying the material, which only directs students through examples in front without any reciprocity or without any combination of methods that follow technological developments. Efforts to utilize technological developments are a real effort of a teacher whose several teachers are sensitive and able to apply the results of the combination of each teaching method to be more

interesting if applied in the learning process will add a distinct impression to a physical education material.

Physical Education Learning Method

The difference in using learning methods Physical education is a learning strategy that should be a concern to take which is the most effective. Physical education in some materials or not all materials in physical education have similarities in several characteristics, thus requiring variations in teaching methods to obtain effective and optimal results. Learning Physical education can change and provide new variations so that students who depart from boredom will find a new variation which is certainly more fun. Students are free to move outside the classroom with clothes that tend to be relaxed so as to support the freedom of movement to apply students' movement abilities. The application of learning models for teachers is an obligation. Conceptual and cultural issues affect the implementation of methods by physical education teachers (Harvey et al., 2020). It is clear that there are several factors that can affect the process and student learning outcomes, one of which is the role of the teacher and the method used. Optimizing the application of learning models by teachers should be supported by various inputs and seen from several criteria that are able to contribute to teachers. Increasing teacher competence is able to provide an increase in teacher sensitivity in reflecting on actual conditions.

Education is an effort made for certain purposes, such as humanizing humans, and improving human abilities for the better. Efforts to improve the quality of education as a process of human development that lasts a lifetime, education in general has various objectives, besides that in general education has specificities such as the existence of subjects in every formal education given to students at school, the role of physical education to stimulate growth and development of children is absolutely necessary. Physical education is a vehicle that is able to educate humans to approach the perfection of life which naturally can make a real contribution to everyday life.

Physical education as one of the education subsystems that must be taught in schools has an important and very central role in the formation of a complete Indonesian human being. Physical education is an educational effort by using big muscles so that the ongoing educational process is not hampered by health problems and body growth. As an integral part

of the overall educational process, physical education is an effort that aims to develop organic, neuromuscular, intellectual and social areas. argued that physical education is a learning process through physical activities designed to improve physical fitness, develop motor skills, knowledge and behavior of healthy and active living, sportsmanship, and emotional intelligence.

This opinion can be explained that thinking specifically through physical education learning, students carry out activities in the form of motor aspects such as movement activities that are structured and designed according to certain goals and in physical education it refers to aspects of games (games), and sports that are adapted to growth. and child development. However, the elements of achievement and competition are also contained in it and are used as educational tools. The role of physical education in sports and health in schools is very important for the development of motor, cognitive, and affective skills. Through the learning process and the development of physical education in schools, it is hoped that students can gain experiences that are closely related to the movement learning that they learn, either from educators, from friends or from discoveries by themselves. Improving the level of physical fitness of students is the main goal of physical education in schools by providing materials that stimulate children to move and have been regulated in the curriculum.

The selection of the right teaching style is the key to the success of a teacher in providing learning for his students, in addition to the encouragement that students have from within and from outside greatly determines success in learning, as well as the motivation in students to take part in the physical education learning process has a major role as basic goals of student learning success. The achievement motivation of students will be more perfect if it is combined with the right teacher teaching method or method, so the selection of teaching methods or styles is very important to consider given the diversity of characteristics possessed.

The different characteristics of each student become a problem in the implementation of the learning process, because the teacher must pay attention to the characteristics of each student, such as physical conditions for example. In this case the teacher's role is needed in his attention to the physical condition or health of his students. Not a few students are often absent in physical education learning for various health reasons. Therefore, this is where the figure of the physical education teacher has a bigger role, namely giving special attention to

students. In addition, it is necessary to give a special test to each student to clearly know the health condition, because it could be that students only use health conditions as an excuse not to take physical education lessons, or it is true that the student has a health disorder that cannot be forced to attend.

It is different if a student experiences a physical injury, either due to sports activities or due to non-sports activities that make the student unable to carry out movement activities, the teacher should provide other steps, such as giving individual assignments to these students, by giving assignments regarding sports injuries and handling, with various hopes that students will better understand and understand the dangers of uncontrolled motion activities and the purpose of good and correct injury handling.

Implementation of learning methods on some materials that are considered to have a high level of difficulty is a challenge for physical education teachers to meet the competencies and learning objectives of physical education in particular. Physical education has the main goal of being able to offer authentic types of learning in the context of physical education in schools, as well as providing support for sports practitioners in schools to be more enthusiastic and literate (Segovia & Gutierrez, 2020). The learning model can be applied to various situations and is designed to support certain conditions, so that the perceived impact will tend to be more effective and feel real. The physical education learning model developed can also contribute to the implementation of learning during the COVID-19 pandemic (Franco et al., 2021). Seeing from this study, it can be explained that physical education learning is actually learning that cannot be separated from methods to harmonize with certain situation conditions, one of which is currently being hit by COVID-19.

Learning Physical education in floor exercise material is a type of material that is not easy to do, so that in practice it often encounters some typical obstacles and requires a solution to solve the problem. The solution is expected to be able to support various conditions, especially during the current COVID-19 pandemic. The latest technological developments can update various environmental conditions, such as the COVID-19 condition which requires special attention both in terms of education to anticipate the smoothness of the learning process, as well as in filtering one's health condition. Digital health technologies can facilitate pandemic strategies and responses in ways that are difficult to achieve manually (Whitelaw et al., 2020). In line with efforts in education that prioritize aspects of

digitalization to facilitate access and educational achievements in general. Digitization is expected to be accessible and enjoyed by various levels of society. However, the reality is that there are certain aspects or layers of society that are still experiencing certain difficulties.

For some time COVID-19 has emerged and is becoming a threat to people all over the world (Akerson & Carter, 2021; Canese, Mereles, & Amarilla, 2022; Gultom et al., 2022; Hu & Huang, 2022; Khanna et al., 2020; Kibici & Sarıkaya, 2021; Marpa, 2021; Onat Kocabiyik, 2021; Paramitha et al., 2022; Paudel 2021; Paudyal & Rana, 2021; Sahin & Shelley, 2020; Xhelili et al., 2021). Conditions like this affect various education sectors, ranging from learning that is completely limited and becomes an obstacle, to access to the educational environment which is still minimal. The COVID-19 pandemic is a major challenge for the education system. This viewpoint offers guidance to teachers, heads of institutions, and officials in dealing with crises (Altawalbeh & Al-Ajlouni, 2022; Daniel, 2020; Dankers, Stoltenkamp, & Donson, 2022; Jackowicz & Sahin, 2021; Kilincer, 2021; Nnebedum, Obuegbe, & Nwafor, 2021; Paramitha et al., 2022; Serhan, 2020). The application of the learning system in the COVID-19 conditions turned out to have high hopes to be able to make a positive contribution to various aspects, especially aspects of education to complete the nation's goals and educational goals in particular.

Physical Education Learning Strategy

Today the world of education is experiencing rapid progress which is marked by attention to the field of testing educational values, educational goals, educational curricula, and learning methodologies. The education aspect has several aspects that need to be developed through research. One of them is the learning process in an effort to produce an effective and efficient learning model. Basically, a universal learning theory is needed that focuses on teaching as a stand-alone aspect. The teaching theory should always include all phenomena and conditions of all elements that are integrated in actual activities.

Understanding of teaching styles is a necessity for a teacher, especially physical education with various student characteristics, different numbers of students, and the objectives of learning which cover three domains, namely, psychomotor, affective and cognitive aspects. Referring to the various aspects of physical education movement and requiring teachers to be active, this is in accordance with "one way to teach movement material in order to be

successful using teaching styles, because teaching styles are special guidelines for the structure of learning episodes or learning stages".

Teaching style is a teaching and learning strategy to achieve educational goals, the teaching process is expected to improve each person's ability to express their personal ideas. Therefore, teachers must be able to bridge or connect students with learning materials, and create a harmonious and conducive atmosphere in teaching and learning activities. Teaching style is the ability of teachers to use various ways to get around the teaching system so that the objectives of the teaching and learning process can be achieved effectively and efficiently. From the overall teaching styles above, the researcher chose two teaching styles that were used as research materials, namely the teaching style of practice using video and live demonstrations.

In the style of practice there are several decisions during the meeting that are transferred from the teacher to the students. This decision shift gives students a new set of roles and responsibilities. The target training style differs from the command style, in relation to teacher behavior and student roles. Goals related to student performance assignments are as follows: Practice the tasks that have been given as demonstrated and explained. Demonstrating tasks given appearance. The length of training time is related to performance skills. Have experience and knowledge of the results (feedback) given by the teacher in various forms.

Teaching style or method includes an effort to improve abilities and skills starting with basic skills in moving. Basic skills should receive attention at an early stage, and teaching is continuous. The term skilled can be expressed to describe a person's level of expertise in performing a task. Skill is seen as an act or task and another as an indicator of proficiency level. Skill is a consistent degree of success in achieving a goal efficiently and effectively. A skill there is a must for the implementation of a task that is independent of the element of chance and chance.

Skills based on genetic factors and environmental factors can be divided into two, namely: phylogenetic skills and anthogenetic skills, which arise naturally as a result of the aging process. Phylogenetic skills are skills that children are born with which may be elements of genes that are passed down from parents. To be able to master sports skills, children only

need a little guidance and practice to master movement skills. Meanwhile, anthogenetic skills are skills that result from practicing experience as a result of environmental influences. Anthogenetic skills are the result of practice and experience. Based on the above opinion, it can be concluded that basic skills are useful skills that show a consistent level of proficiency and degree of success to achieve goals efficiently and effectively.

Physical education is learning that tends to involve movement activities, in other words it is better known as psychomotor. Physical education is a learning process through physical activity designed to improve physical fitness, develop motor skills, knowledge and behavior of healthy and active living, sportsmanship, and emotional intelligence. This does not eliminate the cognitive and affective domains, because physical education seeks to provide learning to students about understanding a movement in which it is based on discipline, physical education is a collection of physical activities carried out to achieve certain goals. So it can be explained about the nature of physical education, is an activity that involves physical and with targeted goals, such as physical fitness, understanding, and movement skills.

Physical education, sports and health are media to encourage physical growth, psychological development, motor skills, knowledge and reasoning. Referring to the opinion above, it clarifies the meaning of physical education and the aspects in it, where physical education is a learning process that contains many things and goals, such as physical, knowledge and attitudes. To be clearer about the aspects that exist in physical education, it is explained about the data collected in physical education including traits in the cognitive, affective and psychomotor domains.

It can be concluded that physical education is a learning process in which there is interaction that aims to develop various aspects, referring to the term interaction in physical education, the teacher is the main player in the implementation of the learning process. So it is very clear that a physical education teacher is like a director, where a physical education teacher must be able to plan, design and practice the learning process in delivering teaching materials to students, so that the objectives of learning physical education in particular and education in general can be achieved.

It can be concluded that physical education is a learning process in which there is interaction that aims to develop various aspects, referring to the term interaction in physical education,

the teacher is the main player in the implementation of the learning process, this has been explained by Komarudin (2016: 3) explaining " In the context of physical education learning, the role of the teacher is very clear as the manager of the teaching process, so it is very clear that a physical education teacher is like a director, where a physical education teacher must be able to plan, design and practice the learning process in delivering teaching materials to students, so that the objectives of learning physical education in particular and education in general can be achieved. Based on the previous description, it can be concluded, regarding physical education, which is a tool or media and learning and has a specific purpose in which there is interaction between teachers and students, where through the teacher as a manager and source of material delivery to achieve the goal of understanding student movement, movement ability, fitness and other aspects.

Gymnastics Physical Education

Learning methods or with other names that resemble them with the same goal in an effort to smooth the learning process of physical education, there are some people who refer to the term teaching style. And there are still many books that explain and describe the form of teaching methods, especially physical education. The learning process of physical education does not only focus on how children understand a material, but physical education is a form of complete subject because it has characteristics by collaborating three domains, namely affective, cognitive and psychomotor which are the most dominant. Each domain has a form of assessment that is arranged or designed in such a way that it can explain the results of student learning. So most of the assessment processes in learning have certain benchmarks, in this case the cognitive process is a form of assessment that is said to be valid so that the learning process cannot be separated from the cognitive realm.

Physical education encourages students to have high motivation, especially in terms of achievement, motivation is very important for a student to have because if students are able to increase motivation in learning physical education, students will be more motivated to carry out physical activities in other free time (Fernández-Rivas & Espada-Mateos, 2019), motivation in physical education leads to an action to do something, including motivation in solving problems in learning physical education in particular. Physical education has very good benefits for students specifically in problem solving (November, Sugiyama, Saryono, & Rithaudin, 2019).

Learning in schools has the meaning of interaction between teachers and students. This is in line with the general education system as described below. The education system consists of several elements that support sustainability, including students, teachers, curriculum, administrators, specialists, technology, physical, and financial resources. Seeing from the information above, it is clear that being a teacher, especially physical education, has a very big responsibility in educating students through physical education movement learning. Physical education teachers must be able to modify the form of teaching methods or styles so that they are in accordance with the material to be taught, in this case the teacher must have the ability to master the material as well as pay attention to the characteristics of students.

Physical education learning has various characteristics following the various types of material in it, such as the material for big ball games, small balls, and so on. Physical education has material that requires students to be active. As is the case in floor exercise material, in which there are various components of complex motion, which consist of flexibility, strength, power, balance, agility and so on. Students are more interested in sports that emphasize education rather than competition (Trudeau, & Shephard, 2008). Gymnastics or physical education learning, floor exercise material in particular is very dominant in the ability to maintain balance in every movement. A person must have the ability to balance both statically and dynamically. Gymnastics training can be a useful means to improve several aspects including physical function in children (Sheerin et al., 2014).

Floor gymnastics in physical education learning is a mandatory material that must be taught by physical education teachers and followed by students. Gymnastics tends to put forward a very complex physical component that requires students to be more careful in carrying out physical education learning on floor exercise material, this is because it is very risky to get injured if you make movements incorrectly. Increased ability must be accompanied by motivation and good feelings. Bad feelings can affect the results (Karageorgou et al., 2019). The intensity of exercise outside of school hours can have an impact. Students with a high number of hours of practice and regularly every week will have high achievements as well (Batista, et al., 2016).

The process of teachers teaching on floor exercise material often encounters several obstacles that are directly not realized so that the implementation of the learning process becomes less effective, it could be that the teacher does not master teaching methods or teaching styles,

another possibility is that a teacher is less able to collaborate with several appropriate teaching styles with the character of the material and its students. The main challenges faced by teachers with the implementation of physical education learning are the lack of facilities and infrastructure as well as resources or teachers in schools, lack of knowledge and understanding of physical education by teachers and the need for training in this regard (Stroebel et al., 2018).

Physical education is generally a fun learning. If it is observed that it is very rare for students to be less enthusiastic in participating in the physical education learning process, this proves that physical education is really a fun learning and is able to foster a sense of enthusiasm and develop various components that must be possessed by students. Students tend to be bored if they undergo a learning process that does not vary. Students sometimes experience pressure which results in stress and the biggest source of it is when studying for exams (Verma et al., 2011).

Physical education learning is often a teacher in providing learning more emphasis on classical methods, and tends to bring less variation in teaching styles. A teaching style that provides opportunities for students to do exercises independently with the direction of assignments from the teacher and the teacher provides feedback to students individually is very important in every physical education material, the teacher's role is to be responsible or have full control in learning (Munusturlar, 2014). The practice teaching style is the most common teaching style that is often given in some physical education materials, and makes students more familiar with exercises based on the direction and assignments of the teacher.

Physical education learning that tends to involve physical movement really needs to be considered so that a teacher-centered teaching style is often needed, but it does not rule out the possibility of a combination of teaching styles to be one of the efforts to achieve more effective learning goals. The commando teaching style if applied to learning as a whole will make students tend to be bored, especially in physical education which mostly involves students' psychomotor. For the retention of acquired psychomotor skills in the guided discovery style, the child-centered teaching approach is superior to the command-style teaching approach, which is teacher-centered (Arjunan & Jayachandran, 2012).

The teaching styles or teaching methods that exist in physical education learning have diversity so that in floor exercise material that requires students to be active in several components of physical movement, such as forward or backward roll movements, flexibility, and balance, the role of teaching methods or teaching styles here very needed. In previous studies, it was stated that command, exercise, and inclusion styles can affect the level of student involvement in physical education lessons (Sanchez, Byra, & Wallhead, 2012). Students become interested in participating in the learning process through positive intervention from the teacher (Thodosiou et al., 2016).

Physical education on floor exercise material will certainly be more interesting for students to follow if the teacher in providing learning is able to master the class with joy. The practice teaching style provides opportunities for students to do exercises and directly provides opportunities for teachers to provide feedback to individual students. The teaching style of exercises has a positive impact on motor skills (Chatoupis & Vagenas, 2018). Giving teaching methods with other variations such as a combination of teaching methods will add to the attractiveness of students. Teachers provide feedback and supervision of student performance and decision making (Mosston, 2008). In the future students will be better able to practice the movement.

Physical Education in the Time of COVID-19

The development and growth of each individual during high school is different. This affects the characteristics of each individual during high school. Growth is a physiological change as a result of the process of maturation of physical functions that take place normally in healthy children, in the course of a certain time The result of growth, for example, is an increase in the size of a child's body, such as length, weight, strength, from nothing to being, from small to large, from narrow to broad, and so on. According to Baharuddin (2009: 69) development is a process of growth stages in a more advanced direction. Development involves a process of qualitative change that refers to the quality of the functions of the physical organs. In other words, the emphasis on the meaning of development lies in the improvement of the psychological functions carried by the physical organs. It can be concluded that growth is a physical change, for example, weight and height. While development is a psychological change, for example the improvement of psychological function in individuals.

High school students are in their teens in the age range between 16-19 years. In the stage of growth and development, high school students of course have different characteristics that are influenced by heredity, environment, and so on. According to Izzaty (2008: 127-144) the characteristics of adolescent development and growth are as follows:

- *Physical and Psychosexual Development*

Adolescence is marked by accelerated physical growth. The growth of physical development at the end of adolescence shows the formation of male adolescents as a typical male form and female adolescents into female characteristics. The growth of body weight and length in parallel is influenced by mammotropic hormones, as well as gonadotropic hormones which affect the increase in growth activity and the development of primary and secondary sex characteristics. Physical development is always followed by psychosexual development which includes signs of sexual maturity, differences in criteria for sexual maturity, differences in the onset of sexual maturity, differences in the sequence of symptoms of sexual maturity, and adolescent love development.

- *Cognitive Development*

The development of cognition is always related to intelligence. One thing that distinguishes humans from other creatures is the ability to think they have. Like other aspects of adolescent development, intelligence (cognition) also develops both qualitatively and quantitatively. Quantitatively, intelligence develops since the baby is still in the womb. The rate of development takes place very rapidly from the age of 3 years to early adolescence. Peak development is reached at the end of late adolescence.

In adolescence, interaction with peers is more beneficial than with adults. Individual adolescents have the ability to introspect (think critically about themselves), think logically, think based on hypotheses, use symbols, and think flexibly based on interests. The social environment, family, maturity, the role of cognitive development before the operational stage, culture and social institutions, are very influential on the cognitive development of adolescents.

- *Emotional, Social and Moral Development*

In adolescence there is a special emotional tension so that this period is called the hurricane period. Increased emotional sensitivity is often manifested in the form of teenagers being irritable, aloof, nervous habits, such as restlessness, anxiety and sentiment, nail biting and scratching their heads. Social interaction with other people has started since infancy in a very simple way. In the first year of life, children's social interactions are very limited; the main thing is with the mother and caregivers. At the age of adolescence, social interaction and interaction with peers is wider and more complex than in previous times, including association with the opposite sex.

Morals are teachings about good and bad, right and wrong, morals, rules that must be obeyed and so on. So morality is control, control in behaving and behaving in accordance with the values of life, namely the norms that apply in society. Moral behavior actually occurs in adolescence. Adolescence is a period of youth that must be truly lived in order to achieve autonomous moral behavior. The existence of morals as a whole is a moral issue; this must be seen as a matter of values or judgments.

Reflection of a Research

An experimental study that aims to determine the difference in teaching methods using video as an understanding and teaching methods using video as feedback on the results of physical education learning on the gymnastics material. Population in this study was all high school students, totaling 386 people. The study used a purposive sampling technique, namely the technique of determining the sample by leading to a specific goal or sample objective, the sample in this study were students who had the lowest score on the gymnastics floor exercise material, amounting to 40 students. Performance test on physical education learning material for back roll floor exercise is conducted. The data analysis technique in this study used a different test or t-test with a significance level of 0.05 or 5%.

The scores obtained in the physical education learning outcomes for the gymnastics using the video teaching method as an understanding, namely a minimum score of 4, a maximum score of 19, a mean of 12, and a standard deviation of 4.13. Furthermore, for the value of increasing

physical education learning outcomes for back roll floor exercise using video as feedback, the minimum score is -5, maximum score is 11, mean is 5, and standard deviation is 4.68.

There is a significant difference between the results of the pretest and posttest of physical education learning material for back roll floor exercise using the video teaching method as an understanding as evidenced by the results of sig 0.000 < 0.05 then there is a significant difference in the results of pretest and posttest physical education learning material for back roll floor exercise. using the video teaching method as feedback, this is evidenced by the results of sig 0.000 < 0.05, then it can be explained by the difference in the average of the two learning outcomes using the understanding video teaching method and the video feedback teaching method, namely 12 for the teaching method using video comprehension, and an average of 5 on the teaching method using video feedback.

There is a significant difference in the results of improving physical education learning material for floor roll back exercise using the video teaching method as understanding and the teaching method using video as feedback, as evidenced by the results of tcount 5.23 > ttable 1.686 or sig 0.000 < 0.05. Based on the test results of the analysis of the teaching method using video as an understanding and the teaching method using video as feedback on the results of learning physical education for the gymnastics material. Behind using video as an understanding, then an average of five on the learning outcomes of physical education on gymnastics using the video teaching method as feedback. So it can be explained that the teaching method using video as a student's understanding is better if it is applied in physical education learning on the back roll floor exercise material

Videos that are shown to students before starting the core material will add stimulation to imitate the correct movements according to the videos that students see. The positive response of students in participating in physical education learning will also increase with methods combined with other things such as learning videos. Here, the role of the video before starting learning is of course a special strategy for the teacher in bringing the physical education learning process to be easier to understand, so that the movements in each material will be easier for students to imitate through videos that were previously seen.

In contrast to videos which are done as feedback in every movement, students are only provided with theory and teacher directions to perform back roll movements before and

during learning and feedback is done using videos designed with techniques that match the criteria for good and good movement. It's true then if students experience errors, they are only given directions with videos, this is where video feedback is applied, namely when students make a movement in physical education instead of when they are going to do learning. The methods used as treatment in this study both have advantages and disadvantages, the teacher must be able to understand the type of material, the condition of the students and the number of students, so that with the teacher's ability to understand various characteristics, it is hoped that the delivery of material on physical education learning will be right on target and the process learning can be implemented effectively. Through video media, which is used as a tool to have a positive impact on environmental conditions affected by COVID-19, it is expected to be able to provide positive feedback. Video media can be used as a strategy to increase understanding.

Implementation of Learning Method

In an investigation by comparing different learning methods that are considered appropriate in the physical education learning process, floor exercise material with special techniques can be explained including: From the test results above, it can be explained that there is a significant difference in the results of increasing physical education learning material for back roll floor exercise using the video teaching method as understanding and the teaching method using video as feedback, as evidenced by the results of t count 5.23 > t table 1.686 or sig 0.000 < 0.05. The use of physical education learning methods using a video approach as an understanding turned out to have a significant impact. Make a positive contribution and can support teacher performance and the effectiveness of students' knowledge achievement in understanding a movement or learning material.

Learning in general is an effort to achieve educational goals. The teaching method designed by a physical education teacher in providing learning to students and specifically on floor exercise material with the gymnastics technique. Physical education learning does not only refer to classical methods by focusing on the role of the teacher, but the influence of media or other software is able to provide improvements in training or other performance outcomes (DuqueDomingo & JaimeGómez-García-Bermejo, 2021). Learning media designed by subject teachers essentially have a direction and purpose to maintain and create an effective

and efficient learning atmosphere. Teachers also have an obligation to clarify teaching materials to make it easier for students to understand (Bafaevich, 2021).

Preparation of teaching materials by adjusting learning methods according to certain materials is something that needs to be considered by a teacher. Methods of teaching using video as the insights and methods of teaching using video as a feedback on the learning outcomes of physical education materials floor exercises roll back from the calculation of the average obtained a score of 12 to an average of learning outcomes of physical education materials floor exercises roll back using video as understanding, then an average of five on the learning outcomes of physical education on the back roll floor exercise using the video teaching method as feedback,so it can be explained that the teaching method using video as a student's understanding is better if it is applied in physical education learning on the back roll floor exercise material. The use of the right method turns out to be able to optimize learning outcomes, but it is different with some conditions such as stress in students which has no relationship with learning achievement (Basith et al., 2021).

Videos that are shown to students before starting the core material will add stimulation to imitate the correct movements according to the videos that students see. A performance from individuals including students requires a management performance as one of the goals to facilitate (Hidayat & Wulandari, 2020) which in this case is to facilitate the learning process. The positive response of students in participating in physical education learning will also increase with methods combined with other things such as learning videos. Here the role of the video before starting learning is certainly a special strategy for the teacher in bringing the physical education learning process to be easier to understand, so that the movements in each material will be more easily imitated by students through videos that were previously seen.

In contrast to the video which is done as feedback in every movement, students are only provided with theory and teacher directions to carry out the gymnastics movement before and during learning and feedback is done using videos designed with techniques that match the criteria for good and good movement. It's true then if students experience errors, they are only given directions with videos, this is where video feedback is applied, namely when students make a movement in physical education instead of when they are going to do learning. This is one of the demands of teacher creativity, because not all schools have

adequate facilities, rural schools for example, teacher challenges vary even from the family environment that is involved in it (Ling et al., 2020).

The methods used as treatment in this study both have advantages and disadvantages, the teacher must be able to understand the type of material, the condition of the students and the number of students, so that with the ability of the teacher to understand various characteristics, it is hoped that the delivery of material on physical education learning will be right on target and the process learning can be implemented effectively. Especially during the COVID-19 pandemic, which has not yet shown consistency to recover immediately, the supporting role of online-based media is a must. The convenience of learning, the nature of the teacher in teaching and the suitability of supporting technology as well as physical models of learning and interventions lead to positive changes in teacher beliefs to be something that directly affects the learning process (Jin et al., 2021; Aelterman et al., 2014; Afify et al.., 2021).

The results of video-based learning in this case are very compatible and synergistic in an effort to provide material online, it also strongly supports the provision of online material based on the conditions of the COVID-19 pandemic. The creativity of physical education teachers during the current COVID-19 pandemic is very much needed to support an effective and efficient learning process that is right on target. Physical education which is closely related to psychomotor skills certainly requires various supporting aspects to develop students' knowledge and movement abilities. The existence of the media as a means that can convey material in the form of videos will certainly support the sustainability and of course the goals of physical education can be achieved.

Effective learning actually requires a variety of supports and more special attention, especially with diverse situations, the area where the school is located is one of the reasons for developing new ideas and methods to be applied to student learning using a distinctive or appropriate teaching style to inspire, motivate, and trigger creativity and learning in students (Hagopian & Nohria, 2021). The use of teaching styles affects student learning achievement (Panggua & Sunaryo, 2021). The idea of a teacher in assembling or designing a physical education learning process is one of the reasons and keys to the success of learning. This is in accordance with the positive correlation that occurs between teaching and knowledge development (Trigueros et al., 2019).

The tendency of students to be more able to respond directly to the results of training during learning and providing feedback by teachers to individual students or explanations given by teachers and teachers as well as standing as implementers of learning and managers in the implementation of learning (Jung, & Latchem, 2011). The right teaching method or teaching style affects the success of teachers in teaching (Saputra et al., 2018), so that the teaching method or teaching style of exercise in physical education can be said to be the key to the continuity of the learning process, specifically the ability of students to do back rolls.

The practice teaching style teaches students to master the material assigned by the teacher, with certain task criteria, then the teacher provides feedback on the assignments that the students are doing. Through student ideas, student self-evaluation encourages students to be able to obtain information by changing the stimulus into a response (Las Johansen et al., 2015). A teacher in physical education learning must be able to apply the right teaching style and there will be a separate impact for the teacher if in the active learning process arranges certain learning methods. Intrinsically motivated teachers use teaching styles more productively to have more time on physical activity among students (Hein et al., 2012). The provision of teaching styles in floor gymnastics learning, especially back rolls, is expected to provide positive contributions from both parties, namely teachers and students.

The teaching style of exercises given to students before starting on the core material will add stimulation to imitate the correct movements in accordance with the directions given by the teacher. The positive response of students in participating in physical education learning will also increase with methods combined with other things such as giving demonstrations by teachers or students who are believed to have the ability in this regard or are said to be more capable/skilled. The provision of treatment is adjusted to the time available according to the applicable curriculum. The use of teaching styles can increase opportunities in the process of improving cognitive aspects (Papaioannou et al., 2012). Long-term studies with more treatment periods may yield more reliable findings than these focusing on the present time (Liosi, 2018; Latzoglou et al., 2017).

The methods used as treatment in this study both have advantages and disadvantages, the teacher must be able to understand the type of material, the condition of the students and the number of students. Teachers need to use the right instructional approach to achieve the expected positive results. The results of the training process such as learning are influenced

by the technical complexity of the composition, the level of subject readiness (Alcalá et al, 2018; Syvash et al., 2019), so that with the teacher's ability to understand various characteristics, it is expected that the delivery of material on learning is expected. Physical education will be right on target and the learning process can be carried out effectively and the composition of learning materials will be better.

Physical education learning specifically the ability to roll back on the floor exercise material has a level of difficulty that not all students are able to do smoothly. So there needs to be special training and a combination with the right teaching style, besides that the role of parental support is also important. Parents here are an encouragement for children/students, in other contexts there has been a close relationship between children or students and parents in physical activities or the learning process of physical education and sports (Reverter Masià et al., 2013).

Conclusion

The conclusions in this paper are: to improve students' back roll ability in physical education learning about floor gymnastics, the learning method is designed using video variations as an understanding, which includes good back roll training techniques and management and is designed through a video-based system that can be assembled with online learning as well as through techniques or methods and teaching styles that are adapted to the conditions and characteristics of students or subjects can provide optimal improvement for students. Furthermore, the application of learning conditions during the COVID-19 pandemic can provide very significant benefits and effectiveness.

References

Aelterman, N., Vansteenkiste, M., van den Berghe, L., de Meyer, J., & Haerens, L. (2014). Fostering a need-supportive teaching style: Intervention effects on physical education teachers' beliefs and teaching behaviors. *Journal of Sport and Exercise Psychology, 36*(6), 595–609. https://doi.org/10.1123/jsep.2013-0229

Afify, H. M. N., Alhefnawi, M. A. M., Istanbouli, M. J., Alsayed, A. H., & Elmoghazy, Z. A. A. E. G. (2021). An evaluation of physical model-making as a teaching method in the architectural design studio – A case study at Imam Abdulrahman Bin Faisal University.

Ain Shams Engineering Journal, 12(1), 1123–1132. https://doi.org/10.1016/j.asej.2020.07.002

Akerson, V. L. & Carter, I. S. (Eds.). (2021). *Science Education during the COVID-19 Pandemic: Tales from the Front Lines*. ISTES Organization.

Altawalbeh, K. & Al-Ajlouni, A. (2022). The Impact of Distance Learning on Science Education during the Pandemic. *International Journal of Technology in Education (IJTE), 5*(1), 43-66. https://doi.org/10.46328/ijte.195

Anwar, A. Z., & Suroto. 2015. Survey Tingkat Kemajuan Pendidikan Jasmani Olahraga dan Kesehatan di SMA/SMK/MA Negeri SE-Kabupaten Lamongan. *Jurnal Pendidikan Olahraga dan Kesehatan. 3*(3), hlm. 621-625. Diperoleh dari ejournal.unesa.ac.id/indek.php/jurnal-pendidikan-jasmani/article/view.13905/17816 (diunduh 29 Maret 2016).

Arjunan, D. R. (2012). Effects of Command and Guided Discovery Teaching Styles on Retention of a Psychomotor Skill. *IOSR Journal of Humanities and Social Science, 1*(6), 27–32. https://doi.org/10.9790/0837-0162732

Atilgan, O. E. (2013). Effects of trampoline training on jump, leg strength, static and dynamic balance of boys. *Science of Gymnastics Journal, 5*(2), 15–25.

Bafaevich, A. B. (2021). The Importance of Teaching Methods of Fine a nd Applied Arts. *Middle European Scientific Bulletin, 9*(February), 61–65.

Basith, A., Basith, A., Syahputra, A., Fitriyadi, S., Rosmaiyadi, R., Fitri, F., & Triani, S. N. (2021). Academic Stress and Coping Strategy in Relation to Academic Achievement. *Jurnal Cakrawala Pendidikan, 40*(2), 292–304.

Batista, M., et al. (2016). The practice of physical activity related to self-esteem and academical performance in students of basic education. *Journal of Human Sport and Exercise, 11*(2), 297-310. https://doi:10.14198/jhse.2016.112.03

Canese, V., Mereles, J. I., & Amarilla, J. A. (2022). Teacher Characteristics and Experiences in Light of the Challenges Presented by the COVID-19 Pandemic in Paraguay. *International Journal of Technology in Education (IJTE), 5*(1), 97-116. https://doi.org/10.46328/ijte.202

Chatoupis, C. & G. Vagenas (2018). Effectiveness of the Practice Style and Reciprocal Style of Teaching: A Meta-Analysis. *Physical Educator, 75*(2), 175-194. https://doi.org/10.18666/TPE-2018-V75-I2-7920

Daniel, S. J. (2020). Education and the COVID-19 pandemic. *PROSPECTS, 49*(1), 91–96. https://doi.org/10.1007/S11125-020-09464-3

Dankers, P., Stoltenkamp, J., & Donson, T. (2022). The Perception of Digital Academic Literacy Tutors during the COVID-19 Pandemic at the University of the Western Cape. *International Journal of Technology in Education and Science (IJTES), 6*(1), 1-13. https://doi.org/10.46328/ijtes.318

Fernández-Rivas, M., & Espada-Mateos, M. (2019). The knowledge, continuing education and use of teaching styles in Physical Education teachers. *Journal of Human Sport and Exercise, 14*(1), 99-111. https://doi.org/10.14198/jhse.2019.141.08

Franco, E., Tovar, C., González-Peño, A., & Coterón, J. (2021). Effects of a Sport Education Model-Based Teaching Intervention on Students' Behavioral and Motivational Outcomes within the Physical Education Setting in the COVID-19 Scenario. *Sustainability, 13*(22), 12468. https://doi.org/10.3390/SU132212468

Gultom, S., Baharuddin, Ampera, D., Fibriasari, H., & Sembiring, N. (2022). Profile of Student Physical Fitness Level of Sports Science Study Program: Relationship between Nutrition Status and Learning Achievement during COVID-19 Pandemic. *International Journal of Education in Mathematics, Science, and Technology (IJEMST), 10*(1), 100-112. https://doi.org/10.46328/ijemst.2115

Hackathorn, J., Solomon, E. D., Blankmeyer, K. L., Tennial, R. E., & Garczynski, A. M. (2011). Learning by Doing: An Empirical Study of Active Teaching Techniques. *The Journal of Effective Teaching, 11*(2), 40–54.

Hagopian, G., & Nohria, R. (2021). When the student becomes the teacher: Discovering individual teaching style. *Currents in Pharmacy Teaching and Learning, 13*(2), 177–180. https://doi.org/10.1016/j.cptl.2020.09.013

Harvey, S., Pill, S., Hastie, P., & Wallhead, T. (2020). Physical education teachers' perceptions of the successes, constraints, and possibilities associated with implementing the sport education model. *Physical Education and Sport Pedagogy, 25*(5), 555–566. https://doi.org/10.1080/17408989.2020.1752650

Hecht, J., & Kahrens, M. (2021). How does national culture affect the teaching style in higher education and what are the implications for the student experience? *Tertiary Education and Management,* 1–21. https://doi.org/10.1007/s11233-021-09068-2

Hein, V., et al. (2012). "The relationship between teaching styles and motivation to teach among physical education teachers." *Journal of Sports Science & Medicine, 11*(1), 123.

Hidayat, N., & Wulandari, F. (2020). The impact of leadership behavior on school performance. *Cakrawala Pendidikan, 39*(3), 493–506. https://doi.org/10.21831/cp.v39i3.31005

Hu, H. & Huang, F. (2022). Application of Universal Design for Learning into Remote English Education in Australia amid COVID-19 Pandemic. *International Journal on Studies in Education (IJonSE), 4*(1), 55-69. https://doi.org/10.46328/ijonse.59

Izzaty, R. E. (2008). *Perkembangan Peserta Didik.*

Jackowicz, S. & Sahin, I. (Eds.). (2021). *Online Education during the COVID-19 Pandemic: Issues, Benefits, Challenges, and Strategies*. ISTES Organization.

Jaime DuqueDomingo, JaimeGómez-García-Bermejo, E. (2021). Visual recognition of gymnastic exercise sequences. *Application to supervision and robot learning by demonstration. 143*(9). https://doi.org/https://doi.org/10.1016/j.robot.2021.103830

Jin, Y. Q., Lin, C. L., Zhao, Q., Yu, S. W., & Su, Y. S. (2021). A Study on Traditional Teaching Method Transferring to E-Learning Under the COVID-19 Pandemic: From Chinese Students' Perspectives. *Frontiers in Psychology, 12*, 632787. https://doi.org/10.3389/fpsyg.2021.632787

Jung, I., & Latchem, C. (2011). A model for e-education: Extended teaching spaces and extended learning spaces. *British Journal of Educational Technology, 42*(1), 6–18. https://doi:10.1111/j.1467-8535.2009.00987.x

Karageorgou, A., et al. (2019). Comparative Study of Individuals with and Without Multiple Sclerosis: Overall Profile of Quality of Life, Exercise, Health Behaviors. *International Journal of Sports Science and Physical Education, 3*(4), 55. https://doi:10.11648/j.ijsspe.20180304.12

Kelly Sheerin, Sean Williams, Patria Hume, C. W. and J. G., & Sport. (2012). Effects of Gymnastics Training on Physical Function in Children. *30th Annual Conference of Biomechanics in Sports,* 141–144.

Khanna, R. C., Cicinelli, M. V., Gilbert, S. S., Honavar, S. G., & Murthy, G. V. S. (2020). COVID-19 pandemic: Lessons learned and future directions. *Indian Journal of Ophthalmology, 68*(5), 703. https://doi.org/10.4103/IJO.IJO_843_20

Kibici, V. B. & Sarıkaya, M. (2021). Readiness Levels of Music Teachers for Online Learning during the COVID 19 Pandemic. *International Journal of Technology in Education (IJTE), 4*(3), 501-515. https://doi.org/10.46328/ijte.192

Kilincer, O. (2021). An Investigation of Pre-service Music Teachers' Attitudes towards Online Learning during the COVID-19 Pandemic. *International Journal of Technology in Education and Science (IJTES), 5*(4), 587-600. https://doi.org/10.46328/ijtes.304

Komarudin. 2016. Penilaian Hasil Belajar Pendidikan Jasmani dan Olahraga. Bandung: PT Remaja Rosdakarya.

Kurnik, J. F., Kajtna, T., Bedenik, K., & Kovač, M. (2013). Why parents enrol their children in recreational gymnastics programmes at the beginning of their education. *Science of Gymnastics Journal, 5*(2), 41–52.

Las Johansen, B. C., et al. (2015). The Use of Teaching Styles In Physical Education Perceived by Graduate Students. *International Journal of Education and Research 3*(3).

Ling, Z., Na, J., Yan-Li, S., & Sriyanto, J. (2020). School culture and professional development of school teachers from urban and rural areas in China. *Cakrawala Pendidikan, 39*(3), 609–619. https://doi.org/10.21831/cp.v39i3.31580

Liosi, M. (2018). Activist videos: montage as a creative tool for student reflections on their role as spectators. *Journal of Education and Pedagogy, 3*(1), 1-21. https://doi.org/10.1186/s40990-018-0024-0

Marinsek, M., & Cuk, I. (2010). Landing errors in the men's floor exercise are caused by flight characteristics. *Biology of Sport, 27*(2), 123–128. https://doi.org/10.5604/20831862.913079

Marni Sanda Panggua, Tarsicius Sunaryo, L. G. K. (2021). The Effect of Teaching Style and Teacher's Creativity to the Student's Achievement at Christian Vocational High School of Tagari Rantepao. *Bulletin of Science Education, 1*(2), 145–163. https://www.attractivejournal.com/index.php/bse/index%0AThe

Marpa, E. P. (2021). Technology in the Teaching of Mathematics: An Analysis of Teachers' Attitudes during the COVID-19 Pandemic. *International Journal on Studies in Education (IJonSE), 3*(2), 92-102.

Mosston, M. & S. Ashworth (2008). "Teaching physical education First Online Edition".

Munusturlar, S., Mirzeoglu, N., & Mirzeoglu, A. D. (2014). The effect of different teaching styles used in phsycial education courses on academic learning time. *Egitim ve Bilim, 39*(173), 2014.

Nnebedum, C., Obuegbe, A. S., & Nwafor, H. E. (2021). Assessment of Schools' Reopening after COVID-19 Closures. *International Journal on Studies in Education (IJonSE), 3*(2), 86-91.

Nopembri, S., Sugiyama, Y., Saryono, & Rithaudin, A. (2019). Improving stress coping and problem- solving skills of children in disaster-prone area through cooperative physical education and sports lesson. *Journal of Human Sport and Exercise, 14*(1), 185-194. https://doi.org/10.14198/jhse.2019.141.15

Onat Kocabiyik, O. (2021). Social media usage experiences of young adults during the COVID-19 pandemic. *International Journal of Technology in Education and Science (IJTES), 5*(3), 447-462. https://doi.org/10.46328/ijtes.226

Papaioannou, A., et al. (2012). Advancing task involvement, intrinsic motivation and metacognitive regulation in physical education classes: The self-check style of teaching makes a difference. *Advances in physical education, 3*(2), 110-118. https://doi:10.4236/ape.2012.23020

Paramitha, S. T., Komarudin, Fitri, M., Anggraeni, L., & Ramadhan, M. G. (2022). Rethinking the Relationship between Technology and Health through Online Physical Education during the Pandemic. *International Journal of Education in Mathematics, Science, and Technology (IJEMST), 10*(1), 132-144. https://doi.org/10.46328/ijemst.2165

Paramitha, S. T., Komarudin, Fitri, M., Anggraeni, L., & Ramadhan, M. G. (2022). Implementation of Healthy Gymnastics and Use of Technology as an Effort to Maintain Body Immunity during the Pandemic. *International Journal of Education in Mathematics, Science, and Technology (IJEMST), 10*(2), 328-340. https://doi.org/10.46328/ijemst.2166

Paudel, P. (2021). Online Education: Benefits, Challenges and Strategies During and After COVID-19 in Higher Education. *International Journal on Studies in Education (IJonSE), 3*(2), 70-85.

Paudyal, G. R., & Rana, K. (2021). How University Lecturers and Students Interpret Opportunities and Challenges of Online Mode of Learning. *International Journal of Research in Education and Science (IJRES), 7*(4), 1006-1022. https://doi.org/10.46328/ijres.2383

Reverter Masià, J., et al. (2013). Parental attitudes towards extracurricular physical and sports activity in school-age children. *Journal of Human Sport and Exercise*, *8*(3), 861-876. https://doi:10.4100/jhse.2013.83.11

Sahin, I., & Shelley, M. (Eds.). (2020). *Educational Practices during the COVID-19 Viral Outbreak: International Perspectives*. ISTES Organization.

Sanchez, B., Byra, M., & Wallhead, T. L. (2012). Students' perceptions of the command, practice, and inclusion styles of teaching. *Physical Education and Sport Pedagogy, 17*(3), 317–330. https://doi.org/10.1080/17408989.2012.690864

Saputra, V. D., et al. (2018). The Influence of Teaching Style and Motor Ability Level Toward Pencak Silat Learning Results on The Fifth Grade Students of SD Hj Isriati

Baiturrahman 2 Semarang City. *Journal of Physical Education and Sports, 7*(2), 100-105. https://doi.org/10.15294/jpes.v7i2.23609

Segovia, Y., & Gutierrez, D. (2020). Effect of a game-based high intensity interval training program on body composition in primary education: comparison of the Sport Education model and traditional methodology. *Article in Journal of Physical Education and Sport.* https://doi.org/10.7752/jpes.2020.02113

Serhan, D. (2020). Transitioning from Face-to-Face to Remote Learning: Students' Attitudes and Perceptions of using Zoom during COVID-19 Pandemic. *International Journal of Technology in Education and Science (IJTES), 4*(4), 335-342.

Sheerin, K., et al. (2012). Effects of gymnastics training on physical function in children. *Paper presented at the ISBS-Conference Proceedings Archive*.

Stroebel, L. C., et al. (2018). Challenges facing life skills and life orientation subject advisors in implementation of physical education. *South African Journal for Research in Sport, Physical Education and Recreation, 40*(3), 121-136.

Syvash, I., et al. (2019). Formation of sports specialization as the" group exercises" during the working with young athletes in the rhythmic gymnastics. *Journal of Physical Education and Sport, 19*, 287-292. https://DOI:10.7752/jpes.2019.s2043

Theodosiou, A., Gerani, C., Barkoukis, V., Gioupsani, A., Papacharisis, V., Drakou, A., & Tsorbatzoudis, H. (2016). Self-check and reciprocal teaching styles in physical education: A qualitative investigation of elementary school students' experiences. *Las Palmas de Gran Canaria, 11*(3), 249-252.

Trigueros, R., Mínguez, L. A., González-Bernal, J. J., Jahouh, M., Soto-Camara, R., & Aguilar-Parra, J. M. (2019). Influence of Teaching Style on Physical Education Adolescents' Motivation and Health-Related Lifestyle. *Nutrients, 11*(11), 1–13. https://doi.org/10.3390/NU11112594

Trudeau, F. & R. J. Shephard (2008). Physical education, school physical activity, school sports and academic performance. *International Journal of Behavioral Nutrition and Physical Activity, 5*(1), 10. https://doi.org/10.1186/1479-5868-5-10

Ünal, M. (2017). Preferences of Teaching Methods and Techniques in Mathematics with Reasons. *Universal Journal of Educational Research, 5*(2), 194–202. https://doi.org/10.13189/ujer.2017.050204

Verma, J., et al. (2011). A study on stress stimuli among the students of physical education. *Journal of Physical Education & Sport/Citius Altius Fortius, 11*(1).

Whitelaw, S., Mamas, M. A., Topol, E., & van Spall, H. G. C. (2020). Applications of digital technology in COVID-19 pandemic planning and response. *The Lancet Digital Health, 2*(8), e435–e440. https://doi.org/10.1016/S2589-7500(20)30142-4

Xhelili, P., Ibrahimi, E., Rruci, E., & Sheme, K. (2021). Adaptation and Perception of Online Learning during COVID-19 Pandemic by Albanian University Students. *International Journal on Studies in Education (IJonSE), 3*(2), 103-111.

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Chapter 6 - E-Learning Opportunities: Post-Pandemic Trends and Its Implications for Russian Higher Education

Svetlana Revinova, Inna Lazanyuk, Svetlana Balashova

Chapter Highlights

- The main prerequisite for expanding educational opportunities in the community is the increasing penetration of the Internet and mobile communications.
- COVID-19 pandemic has forced society to jump into e-learning rapidly. The paper identifies the advantages and disadvantages of online learning and highlights the factors that determine the use of this type of education. Analysis of academic literature, media news and teaching experience has revealed trends in higher education.
- A survey was conducted to identify the advantages and disadvantages of the main participants in the educational process.
- We used descriptive statistics methods to test the hypotheses of the study.
- The results showed that online education is firmly entrenched in the educational services industry and has some advantages, such as learning anywhere and anytime, individual approach, combining training with other activities, efficiency, relevance, etc.
- Projects in e-learning take advantage of new opportunities brought by technology, such as an individual educational trajectory, mobile learning (mobile apps), micro-learning, gamification, VR and AR, etc.
- However, e-learning is not without its drawbacks. For example, strong motivation on the part of the learner is needed; isolation from society, and, as a result, communication skills have not improved; limited opportunities for practical activity; lack of guarantees of the result. The most significant difficulties in the e-learning process are implementing practical work, increasing homework assignments, and required time. The results obtained indicate the need to use blended education (online and offline), which has good prospects in the Russian Federation.

Introduction

Information technology laid the foundation for the emergence of e-learning market, which today is relevant and important in the world. Online education combines a huge audience of people from different parts of the world. It provides an opportunity, without leaving home to get an education in various fields with the help of Internet technology. Online education has some benefits for market players who can attract an unlimited number of students, thereby increasing profits and consumers. Students have access to educational programs without leaving the house; the opportunity to study at any suitable time; lower tuition fees compared to full-time education. E-learning has a great potential to spread in today's society. The relevance of online education is that in March 2020 the entire Russian education system found itself within the framework of a forced experiment, surprising in scale - the transition to distance learning. In most countries, there was a similar situation.

The term e-learning has spread at the beginning of the 21st century. Scientific sources give different definitions of this concept, in each of which they emphasize various specific features. Marc J. Rosenberg gave the following description to the term e-learning. e-learning uses Internet technologies to provide a wide range of solutions that increase knowledge and productivity. E-learning is based on three principles: work is carried out over the network; delivery of educational content to the end-user is carried out through a computer using standard Internet technologies (2001). Allison Rossett says e-learning is courses that are hosted on a server on the Internet (2001). E-learning professionals pay particular attention to the exchange of information when teaching over the Internet. Russian specialists of the electronic edition “Informatization and Education” give the following definition: “e-learning is the transfer of knowledge and management of the learning process using new information and telecommunication technologies (“Elektronnoe obuchenie (e-learning)”, 2021). This emphasizes the challenge of e-learning ("knowledge transfer and control"). The predecessor of e-learning is distance learning, which used regular mail: the teacher could send materials and manuals to students. The lack of ability to control the quality and depth of acquired knowledge and assess students' degree of training was a key disadvantage of distance education. All this contributed to its modernization and transition to a more advanced form - e-learning, originally used as a support and supplement to distance education (Mozhaeva, 2013). The law "On education" in the Russian Federation uses the term "distance education technology." Distance learning technologies are educational technologies implemented

mainly using IT networks with indirect (at a distance) interaction between students and teachers.

The essence of the term can be described as a system for transferring knowledge and controlling its quality using information technologies, particularly the Internet and multimedia, without direct physical contact between the student and the teacher. There are several terms synonymous with electronic education, like online education, e-learning (education), distance learning (education), online learning, virtual classrooms, digital education, web-based learning. Education industry consist of the following segments: pre-school education; secondary education; additional schooling; higher professional education; secondary vocational education; additional professional education; language training. Until 2020, e-learning was more commonly associated with acquiring other skills, but this has changed over the past year. In a pandemic, COVID-19 universities, colleges, and schools worldwide have been forced to learn remotely to spread rapidly transmit the virus. For some universities, the transition to online learning was painless. These universities created educational portals with digitized courses before the outbreak of the pandemic. Many experts note the benefits of e-learning (Aggarwal, 2017; Alexe & Alexe, 2019; Catana, Manea & Titan, 2017). The forced transition of almost all educational institutions to online education can play a significant role in restructuring the entire educational process in the future. Critical factors need to be considered: affecting the usage of e-learning system, technological factors, e-learning system quality factors, trust factors, self-efficacy factors, and cultural aspects (Almaiah, Al-Khasawneh & Althunibat, 2020). Flash COVID-19 led to an increase in demand for online educational resources for teaching and learning and promoted the rapid transition to digital education but remain concerns about the effectiveness of student learning (Tang, 2020).

This study represents the segment of higher professional education. The purpose of this work is to give the most complete and at the same time compact cut of the current moment and show the main trends in e-learning in Russia, which, in our opinion, will determine the future of online education in the country and the world. The main objective of our study was to find out the view of students and teachers about the attitude towards online learning that has formed during the pandemic and to confirm or refute the widespread opinion about the positive and negative qualities of e-learning.

Methodology

The study was carried out in two stages. At the first stage, we reviewed open sources on the Internet about e-learning in Russia. We were processing the numerical data held methods of descriptive statistics and the value - the system and methods of comparative analysis.At the second stage, to determine the participants' awareness and satisfaction in the educational process in e-learning. A survey was conducted among students of the Peoples' Friendship University of Russia (RUDN University) in March and December 2020. Focus groups of students 3 and 4 courses of full-time undergraduate involved in e-learning connected with the restrictions introduced in March 2020 (total 142 respondents). The results of this study described in detail in paper Revinova & Lazanyuk (2021). After the second pandemic wave, which covered most of the world's countries, we continued our research to understand how the pandemic affected online education. An additional survey was conducted, which involved 1–2-year undergraduate students (194 respondents in total). At the same time, we surveyed professors to determine the opinion of teachers towards online learning.

During the research, we tested hypotheses about the similarities and differences in the assessments of students and professors. Among the respondents, 64.6% of students are citizens of the Russian Federation and 35.4% are citizens of foreign countries. For information, RUDN University is located in Moscow and is among the best Russian universities in the world. The university is included globally rankings THE, QS and RUR and in the top three among Russian universities. We compiled a questionnaire considering the studied works on e-learning and emerging questions and problems in the authors' professional and pedagogical work. We divided the questions of the questionnaire into two groups. The first part of the questionnaire was about the socio-demographic data of the respondent. The questions of the second part of the questionnaire contained the respondents' answers to the questions of motivation, responsibility in the transition to online learning (general level of educational self-awareness). We processed the survey results using descriptive statistics.

Results

Key Trends in the World of Online Education

The emergence of new technologies such as cloud computing and artificial intelligence, coupled with the increase in Internet penetration worldwide, drives the growth of the online

education industry. The rapid adoption of cloud computing provides flexibility in storage, sharing, and access for both learners and content providers. The use of new tools, such as VR and AR, social networks allow introducing new elements in the learning process demanded by users, which leads to an increase in the share of online education users. The growing number of Internet users has increased market demand for online courses.

The global online education market may reach $ 282.62 billion by 2023 (see Figure 1). According to Global Market Insights, the online education market was estimated at $ 159 billion in 2017, $ 190 billion in 2018, and $ 205 billion in 2019. Its average annual growth rate in the next 5-7 years, according to various forecasts, will be 7-10 % (in global reports, the average is taken, adjusted for the fact that industry growth is uneven). According to ThinkImpact experts, in 2019 the total market for online learning was a little less than 200 billion dollars. The online e-learning sector has contributed the most at $ 101 billion. The online learning market is primarily tied to the academic community. In 2019, the market was estimated at $ 103 billion, and by 2025 its CAGR will be 11.23%. Higher education is 54%, projections calculated before the pandemic COVID-19, which significantly changed the industry.

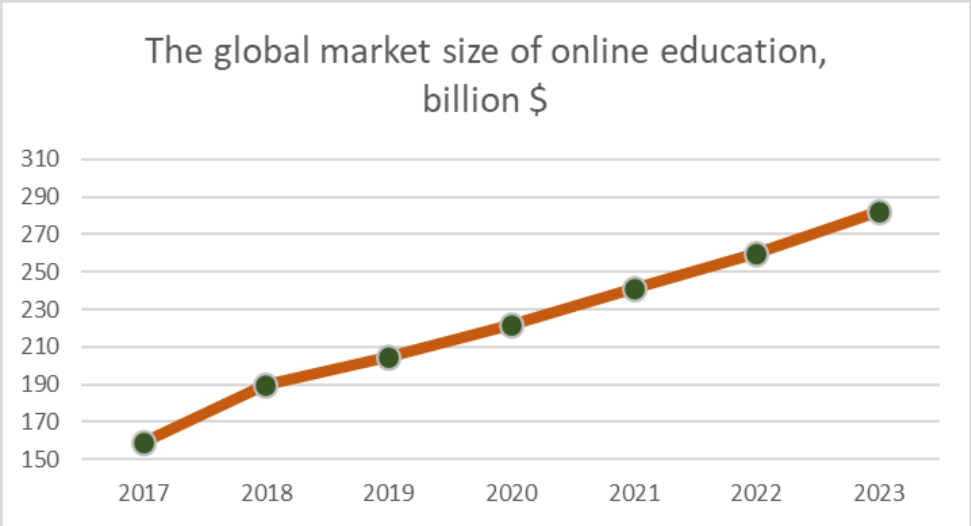

Figure 1. The Global Market Size Online Education (From 2020 to 2023 Calculated Values with Average Annual Growth at the Level) 8, 2%.

Source: Global Market Insights, Education International, expert assessments

One of the most widespread areas of online education is the use of the MOOCs. Massive open online courses (MOOCs) in the world began to develop in 2012 actively. However,

since 2015, European and American universities have been forced to recognize the pedagogical qualities of online education as relatively weak (Margaryan, 2015). Moreover, by 2015, they had reduced their importance among pedagogical approaches (Allen & Seaman, 2015; Jansen & Konings, 2017). Simultaneously, the pandemic period in a brief period has made it possible to change the view of online learning in practice. Such popular platforms as Coursera, etc., have spread in almost all countries, the Russian Federation is no exception.

Today, there are two most well-known methods of organizing training over the Internet: asynchronous and synchronous training. Synchronous learning is a teaching method in which the learner and the teacher interact in a specific virtual place through one particular online environment at a particular time. Asynchronous learning is a teaching method during which the contact between the trainer and the student delayed. The online course can be implemented in both asynchronous and asynchronous format depending on the learning objectives. The restrictions introduced by the pandemic in 2020 forced many schools to use both methods of training, often in mixed form. In choosing a synchronous training format, the following tools are available to users: cloud-based open systems of distance learning, web solutions, communication in messengers, webinar, online broadcasting, and workshops. Synchronous learning format is perfect for the following applications: online training and familiarity.

In educational institutions, corporate portals create for the organization of online learning. However, to use freely available services: Microsoft Teams, Zoom, Pruffme, Skype, etc. On the Russian e-education market, there is a comprehensive solution in the form of the GetCourse educational platform. On this platform, can post lectures in any format (video, audio, text), give feedback both individually and in a group, conduct tests and maintain ratings to track student results. Accelerated digitalization and the development of information technology make it possible to introduce novelty in teaching methods, attract new customers, and increase their interest. Several current trends in online education are characteristic of Russia and at the global level.

Micro-learning. This trend allows students to learn a lesson not in the standard 45-90 minutes but literally in 5-10 minutes. The benefits of micro-learning include convenience, efficiency, portability, fun and memorability. However, in addition to the advantages, there are also

some disadvantages. For example, micro-learning does not correspond to complex tasks or skills, it is a fragment of full-fledged content, therefore, if the topic is complex, has many aspects and requires an extended analysis, it will not work to assimilate it in the format of short videos.

Gamification. This trend is the most controversial, but at the same time it increases the efficiency of the educational process. Gamification involves the use of game elements in the learning process. The main objective of this form of training is to attract students' attention and increase their interest in solving educational problems and subsequently applying the knowledge gained. Gamification includes elements such as splitting information into "levels"; access to the next level only after passing the previous one with the consolidation of the acquired knowledge; visual display of progress in the form of medals, points, awards, points, statuses, graphs and more; competitive element or teamwork. Technological innovations such as learning games expand learning opportunities (Näykki et al., 2019).

VR u AR. Immersive learning involves the use of virtual and augmented reality technologies. According to Forbes, the VR market for education solutions has reached nearly $ 16 billion ("Infografika kto i skolko investiroval v startapy v pervoj polovine 2019 goda", 2021). The use of VR in the educational process assumes that the student is in a specific environment. This environment does not require a faithful reproduction of the surrounding reality. The essence of augmented reality (AR) is to create and reflect the relationship between the real and the virtual world. The competitive advantages of immersive learning are motivation, control, interaction, practicality, interactivity, spatial orientation, and more.

In addition to the above trends, there are also trends in creating a community and networking (work to develop a network of business contacts), practice-oriented training based on case studies, and specific tasks related to students' everyday lives. However, it is worth remembering that sooner or later, some trends become outdated and new ones appear, so they cannot adhere to the same direction for a long time, as this can cause the loss of consumers.

Russian E-learning Industry before COVID-2019

Twenty-seven years have passed since creating the first electronic educational project in Russia in 1993, but the market began to grow and develop actively only in 2017. A key

indicator by which to judge the development of online education is the total volume of investment. Large Russian companies of various profiles such as the Internet Initiatives Development Fund (IIDF), Yandex, Mail.ru Group, Severgroup, TechnoNikol and others invest in the e-learning industry. Between August 2017 and October 2019, 45 significant public transactions worth $ 55 million took place ("Issledovanie rynka onlajn-obrazovanija 2020", 2021). Figure 2 shows the growth in investment volumes over the years. In 2019, the importance of investments in the market grew by 156%, and the total volume of investments amounted to 34.5 million dollars.

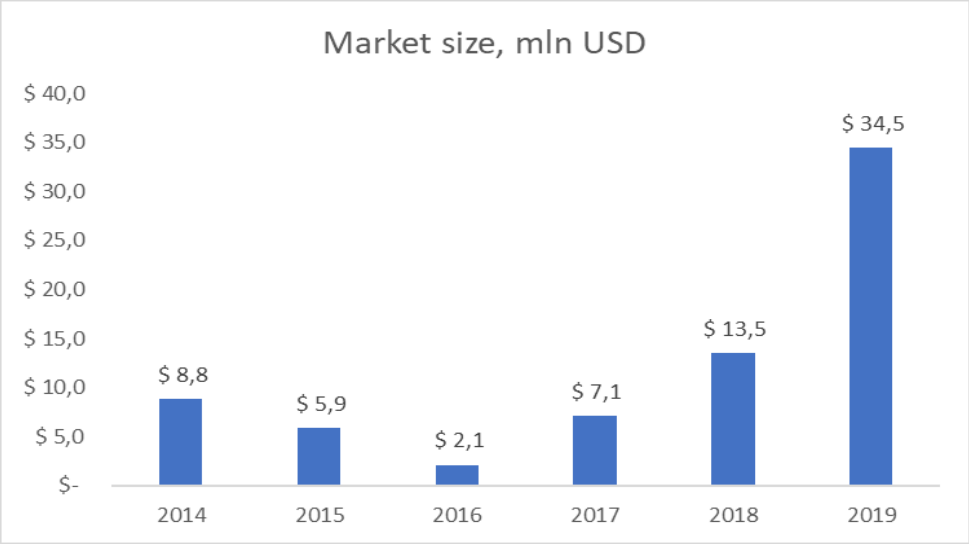

Figure 2. Total Investment in Russian Online Education

Source: Online Education Market Research 2020. Research.edmarket.ru. (2021). Retrieved 13 April 2020, from https://research.edmarket.ru/.

We can say that this statistic only takes into account public transactions. Experts suggest that non-public transactions, the volume of financial injections into the market amounted to at least $ 80 million over the past three years ("Infografika kto i skolko investiroval v startapy v pervoj polovine 2019 goda", 2021). It means that the market is growing at an even faster pace. Already, we can note steady trends in the development of e-learning in Russia.

1) Some large educational projects are rapidly expanding their geography and are consolidated not only in Russia and the CIS countries but also abroad. For example, projects such as Netology, Algorithmika, Uchi.ru have spread in India, China, the USA and Mexico;

2) in the industry, highly specialized profiles of specialties appear, for which there is a huge demand. For example, online school producers, methodologists, screenwriters and digital marketers;
3) increased competition between players;
4) a growing number of users of technological learning platforms (such as GetCourse, Bizon365).

In 2020, all participants in the educational process forced to look towards e-learning: courses, additional vocational education, schools, and higher educational institutions. To one degree or another, they used their information systems and well-known online platforms. The prospects for further growth of e-learning largely depend on the advantages and limitations of this type of training.

High School e-Learning Opportunities

E-learning has some benefits for higher education. Below we have discussed the most prominent services provided by e-learning.

Mobile learning. Mobile learning involves the use of mobile technologies in the learning process. Such technologies make the process flexible and continuous since students can keep in touch with the teacher anywhere and anytime. Everybody can use various messengers, social networks, e-mail and much more. Companies whose courses are available from desktop and mobile devices and applications are in high demand among consumers. Currently, the global mobile learning market is $ 28.3 billion and will reach the $ 70.1 billion mark by 2024 ("Novaja azbuka kak potrebnosti pokolenija Z menjajut onlajn-obrazovanie", 2021).

Individual approach. In traditional teaching, there is a developed and approved program from which one cannot deviate. In electronic education, the psychological and intellectual abilities of the student are taken into account, which allows determining an individual trajectory, for example, changing the sequence of the material being studied or accelerating/slowing down the pace of passing the training modules. The most popular are now educational lines. A consumer can assemble a personal program from individual modules that will meet his needs—the ability to combine training with other activities. Electronic education is mobile,

which means that the student can distribute the remaining free time. In this regard, independently, he can also combine education with any other activity (for example, travel, work, etc.).

Feedback. Online platforms that have established input from students will indeed outperform courses that do not provide feedback. Feedback can take many forms: consultation, one-on-one support, homework, etc. It allows the teacher to get an idea of the dynamics and completeness of mastering knowledge and development of students. Moreover, the student's feedback will enable him to assess his activities, advice, remarks and corrections.

Profitability. According to statistics, the cost of e-learning is significantly lower than the traditional one. The cost of renting premises and its maintenance, administrative staff, and equipment for students (computers, interactive whiteboards) reduced.

Relevance. Firstly, e-courses are created much later than traditional ones, which means that their information is much more relevant. In e-learning, teachers use new approaches to the assimilation of knowledge, test the latest pedagogical methods. Secondly, it is easier to update information on electronic media than, for example, in printed sources and educational publications.

In addition to the advantages of the transition to online education, some limitations are that the creators of electronic educational projects face.

Limitations of e-Learning for High School

The Russian Online Education Market Research Study ("Issledovanie rynka onlajn-obrazovanija. 2020", 2021) also surveyed on this topic. We found that the main barrier holding back the development of the market is the specificity of the Russian target audience. The low paying capacity of the target audience noted by 46% of the respondents, 38% of the respondents stated that their views were conservative, and 23% did not understand the volumes and needs of their customers. Among the market barriers, there is a shortage of qualified specialists in the industry (29%), restricting the part of the state (22%). Our studies showed that there are some restrictions for the large-scale use of e-learning. Strong student motivation is required. The main disadvantage is that learning outcomes and residual

knowledge largely depend on the learner's level of self-control. This disadvantage stems from the benefits. With e-learning, the learner can independently choose a comfortable time and learning style.

Limitedness from society, communication skills is not improved. Studying on electronic educational materials, the student is limited in live communication. However, modern electronic programs have learned to neutralize this drawback by introducing videoconferences (webinars) into the educational process — limited opportunities for practical activities. Electronic education can only form a theoretical knowledge base. After passing the module, online tests and control questions do not give a complete picture of the practical aspects of applying the knowledge gained.

Lack of guaranteed results. Even when choosing an individual trajectory of the educational process, e-education does not ensure one hundred percent mastering of the material. As a result, the developed program may be ineffective or calculated for "short memory".

Technical difficulties in creating an e-course. The development of an electronic course implies the systematization of educational material and the development of an electronic space for its placement (educational platform). This task requires the involvement of specialists - programmers, designers.

Technical failures on the Internet, as well as poor scalability of the software. This disadvantage is especially pronounced in online classes in large groups (from 50 people). There may be technical failures during a live broadcast on any site: deterioration in the quality of sound and video, a time lag between the teacher and the students.

Russia is a federal state and consists of 85 subjects united in 8 federal districts. The digitalization of Russian regions is proceeding unevenly due to the high differentiation of the constituent entities of the Russian Federation. Moreover, the degree of IT and Internet penetration in organizations of the constituent entities of the Russian Federation and households differ. Some regions are leading in infrastructure development, financial capacity and staffing. There are also problems and promising areas of technology testing in the development of digitalization in higher education in the regions of Russia. In recent years, there has been a positive trend in digitalization in all federal districts and subjects. We note

that not all regions of Russia are ready for the introduction of new digital platforms. It makes it challenging to use all the possibilities of online education. The problem of lagging regions lies in the development of infrastructure and insufficient funding. It encourages organizations to use all the opportunities provided by the Internet more intensively (Revinova & Lazanyuk, 2018).

Table 1. Share of Organizations (%) Using the Internet, by Constituent Entities of the Russian Federation

The subject of the Russian Federation	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Russian Federation	**89,0**	**88,1**	**88,7**	**88,9**	**91,1**	**91,2**
Central Federal District	90,0	90,8	91,1	92,4	93,4	93,1
Northwestern Federal District	92,9	92,4	93,4	93,3	92,8	92,1
Southern Federal District	85,9	82,9	85,5	86,7	91,6	91,8
Volga Federal District	88,6	87,2	88,0	88,7	91,2	92,8
Ural federal district	91,9	89,1	89,0	88,6	90,9	91,7
Far Eastern Federal District	88,7	88,0	88,3	87,0	89,4	91,1
Siberian Federal District	85,9	85,3	85,1	84,6	88,6	89,4
North Caucasian Federal District	90,5	89,0	90,0	85,9	83,9	77,7

Source: https://rosstat.gov.ru/

According to the Federal State Statistics Service of the Russian Federation, in terms of Internet penetration into organizations operating on the territory of the Russian Federation (including higher education organizations), the leader in the Central Federal District, including Moscow (see Table 1). This indicator was ahead of all other constituent entities of the Russian Federation - 98.4% in Moscow. On average in Russia, Internet penetration in organizations was 91.2%. Three federal districts are still below this indicator: The Far Eastern Federal District, the Siberian Federal District, and, in the last place, the North Caucasian Federal District.

In total, in the Russian Federation in 2020, according to the Ministry of Education and Science of Russia, 710 educational organizations were carrying out educational activities in educational programs of higher education. The number of universities in the Central Federal District 258 universities (see Table 2), 144 universities are located in Moscow.

Table 2. Number of Educational Institutions of Higher Education by Constituent Entities of the Russian Federation

The subject of the Russian Federation	Educational organizations of higher education, total
Russian Federation	**710**
Central Federal District	258
Volga Federal District	111
Northwestern Federal District	87
Siberian Federal District	70
Southern Federal District	58
Ural federal district	47
North Caucasian Federal District	40
Far Eastern Federal District	39

Source: https://minobrnauki.gov.ru/opendata/9710062939-svedeniya-ob-obrazovatelnykh-organizatsiyakh-osushchestvlyayushchikh-obrazovatelnuyu-deyatelnost-po-

The data presented show that universities locate in all federal districts. The lagging regions need to solve the issues of introducing digital technologies into the educational process, develop infrastructure and Internet access for smooth operation during COVID-19. Universities need to address this issue to close the gap with competitors and not lose students. It will deprive the regions of the influx of qualified personnel into the labor market and hinder the development of the economy along an innovative path (Balashova, Lazanyuk, & Matyushok, 2018)

Survey Results

The past year has forced everyone to move to online learning. It enabled many researchers to gather a large enough database with the results of surveys that allowed them to confirm or deny the above advantages and challenges of e-learning in higher education and to identify missed opportunities earlier. Such studies were carried out in many educational institutions in Russia, Austria, India, Egypt, Indonesia (Radha et al., 2020; El-Seoud et al., 2014; Ebner et al, 2020; Alqahtani & Rajkhan, 2020). We conducted this research at the RUDN University at the Faculty of Economics.

RUDN University is located in Moscow, currently, about 1,790 people study at the Faculty of Economics, a third of whom are international students. We interviewed 1–4-year students of full-time undergraduate studies at RUDN University who are involved in e-learning connected with the restrictions introduced since March 2020 (194 respondents in total). The questionnaire was conducted among the professors; a total of 50 respondents took part in the survey. The teaching experience of professors varies from 1 to 50 years, the average teaching experience is 18 years, the median is 19, and the standard deviation is 11, which indicates a relatively representative sample of the teaching group. The sample is symmetrical series with broad coverage of the team with extensive teaching experience.

The Students' Opinions

The survey results showed that among the main advantages of distance learning training 67.5 noted in a comfortable environment, 46.4% - the opportunity to combine study with work, 26% - reduces unnecessary information. Only 5.2% are sure that this type of training has no advantages. The main disadvantages of distance learning - is the complexity of practical assignments (64%), lack of personal contact (37%), as well as difficulty in mastering the material (37%) due to the large volume of defined tasks. Of all respondents, 41.8% use smartphones, 55.6% computers and laptops. Perhaps this affects the quality of mastering the material and an increase in preparing homework since the screen size also affects the perception of information. More than 73% of students had no problems accessing the RUDN information system, which indicates the university's readiness or a quick response to technical difficulties in the current conditions during a pandemic. According to 49% of students, with the transition to online learning, classes have become more accessible. Finding the necessary information has become easier for 48.5%, and 10.3% felt difficulties finding materials. Perhaps this is due to insufficient knowledge of computer technologies in terms of professional skills. The survey data confirm it since when answering the question with what difficulties encountered in distance learning, 13.9% of respondents indicated "Insufficient knowledge of computer technologies".

The conclusion about motivation for learning and responsibility for results turned out to be very interesting for us. It turned out that the transition to distance learning led to a decrease in students' level of motivation in 37.1%, and another 39.7% believe that the level of motivation has not changed. Only 18% believe that motivation has increased (see Figure 3).

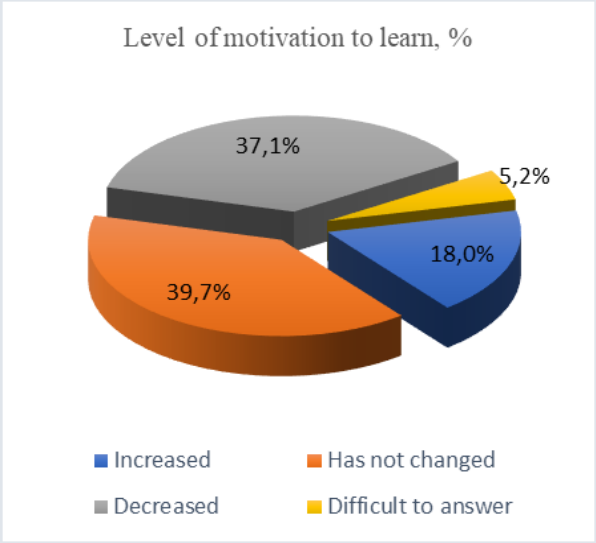

Figure 3. Level of Motivation to Learn, %

Perhaps this is due to a decrease in control by the teaching staff over the work of students. There are two main types of motivation: intrinsic and extrinsic. Intrinsic motivation - these are the internal motivations and needs of the student, his inner driving force. For example, a student is interested in a particular topic, and it is included in the circle of his interests. In contrast, external actors provide extrinsic motivation, such as a teacher praising a student for an excellent job. Our research has shown that intrinsic motivation is a significant component in distance and blended learning and plays a more critical role in motivating students than extrinsic motivation.

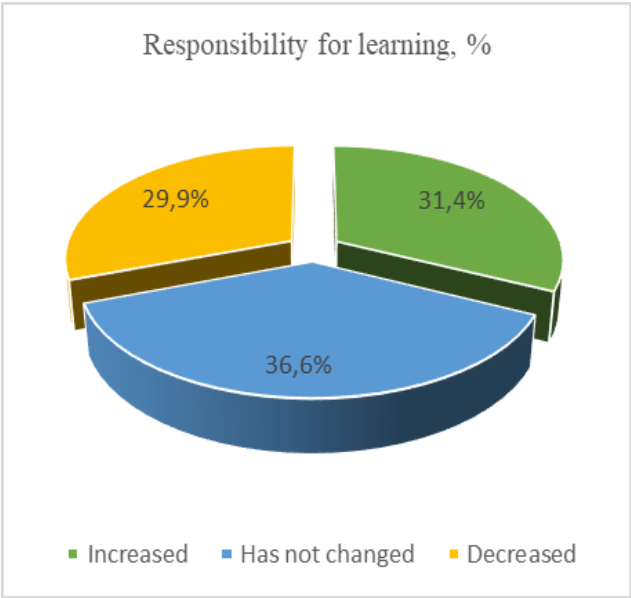

Figure 4. Responsibility for Learning, %

The survey showed an increase in responsibility for 31.4% of respondents, a decrease in responsibility for 29.9% and 36.6% answered that responsibility has not changed (see Figure 4). Compared to the previous study we conducted earlier, the level of responsibility increased by 15%. At the beginning of the transition to online education, students were not ready for such a sharp transition to online learning and it took them some time, namely more than six months, to adapt. Adaptation to distance learning is necessary for students and teachers, and setting up technological platforms for conducting online classes also requires some additional time. As we expected, the time for study increased by 55.2% on average (see Figure 5).

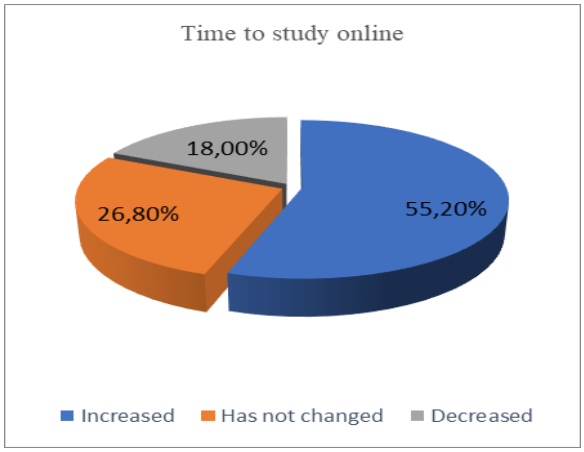

Figure 5. Time to Study Online

Due to the increase in homework, this was confirmed by 64.4% of respondents (see Figure 6). Furthermore, according to students, the workload has increased, said 60.5% of respondents. Therefore, teachers need to think over the form and amount of homework to keep students motivated to learn.

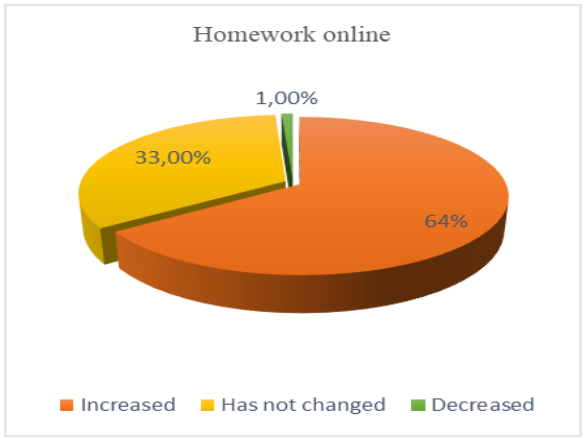

Figure 6. Homework Online

Students noted that communication with the teacher has become more difficult (47.4%), since contact with the teacher is not carried out in person, but by email or through the information system of the RUDN University (89.6% of respondents), which confirms the importance of full-time communication between students and teachers. We were interested to know how comfortable the transition to online education is for students, is there an opportunity to combine study with work? The study showed that most respondents are satisfied with the online learning process (see Figure 7).

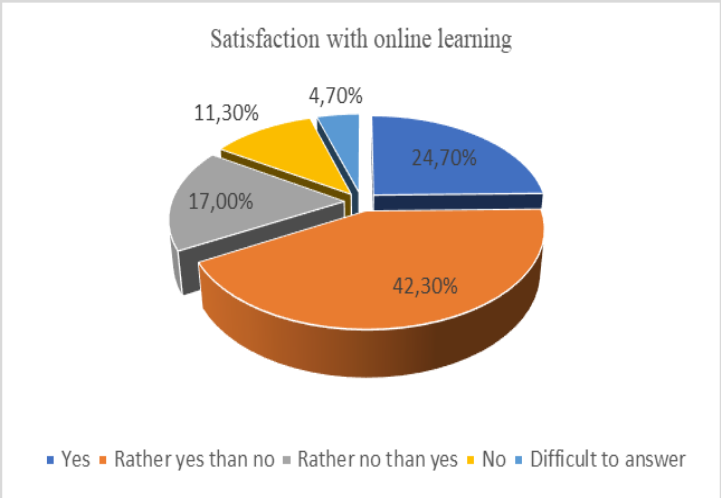

Figure 7. Satisfaction with Online Learning

As can be seen from Figure 7, 67% are satisfied with the online learning process, the remaining 33% of the respondents probably experience difficulties associated with insufficient knowledge of computer technologies or an inadequate level of the Russian language, since out of 194 respondents, 63.9% are citizens of the Russian Federation and 36.1% foreign citizens. Another interesting observation was that 37.1% combine school with doing housework, 34.6% combine study with work and travel on business, and only 28.4% focus only on study. In response to the question "What advantages do you find in online learning?" Students noted the opportunity to combine study with work, thus consolidating the acquired knowledge and skills while studying in the professional community. Also, most of the students positively noted the opportunity to learn in more comfortable conditions for themselves, view the recordings of video lessons again, and download lectures and presentations.

Our research from March 2020 to March 2021 found a positive trend in student attitudes

towards online learning. At the beginning of the transition to online learning, we noted many negative reviews, technical difficulties, questions with finding information, access to lectures, testing, etc. A year after introducing online learning, most students note the convenience of online learning (79.6%). The students highlighted such advantages as the convenience of lecture courses in video lectures, updating content and archiving old materials. However, as before, the implementation of practical tasks causes great difficulties. In our opinion, to master practical skills, training should be from person to person, in a group: with each other and for each other, there is not enough individual approach to the student.

The Professors` Opinions

The attitude of teachers towards online learning does not always coincide with the opinion of students. When asked what online device classes are conducted, in contrast to the student part of the respondents, most of the teachers answered the computer (86%), only 14% chose a smartphone. Probably, it is more convenient to conduct online classes from a laptop, but they can study from a smartphone. As well as students, most teachers during online learning did not experience technical difficulties with access to the university's information system (86.1%), which confirms that RUDN University is well prepared for this situation. With the transition to online learning, according to professors, the level of motivation among students to study has decreased, according to 46.5% of respondents, has not changed - 25.6%, increased by 14% (see Figure 8).

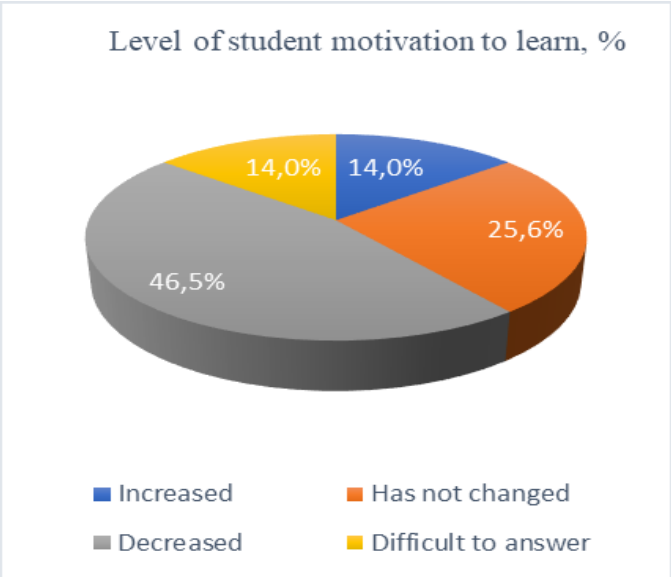

Figure 8. Level of Motivation to Learn, %

Most of the professors gave a good assessment of students' work in online learning, 51.2% noted good understanding of the studied subject, 30.2% satisfactory and 11.6% informed poor mastering of the material (see Figure 9).

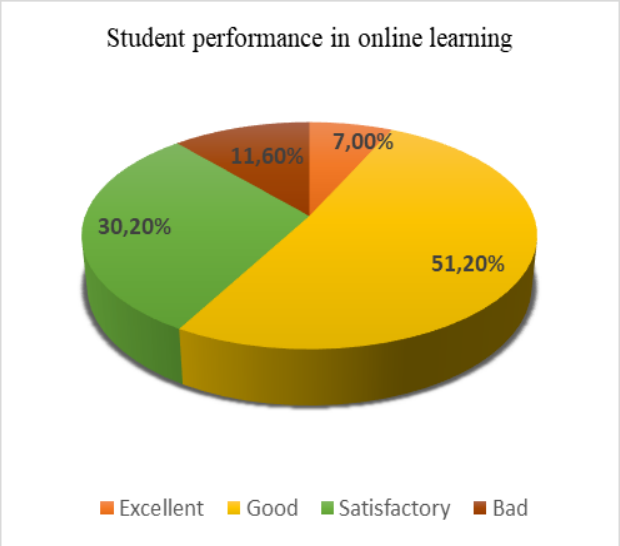

Figure 9. Student Performance in Online Learning, %

We believe that this is due to an increase in the academic load on students. However, only 32.6% of teachers believe that it has increased, 44.2% believe it has not changed. According to students, the workload has increased, 55.2% of respondents think so. The second reason is possibly related to the lack of absolute control of attendance at classes and monitoring the independent performance of work and the lack of face-to-face communication between students and professors. Professionals need to understand how students understand the material (by their eyes, questions, answers) to adjust the educational process quickly. There is no quick live feedback between professor and student during online learning, and there is no individual approach to the student. Not every student will ask questions by email or once a week in class. Communication in online learning, like students, professors is more carried out by email. During the pandemic, the number of students and professors using the platform for conducting online classes, in our case TEAMS, has grown. This platform simplifies communication using chat, call, file transfer and calculations through split screens.

Professors, as well as students, noted an increase in workload. Most of the professors surveyed (93%) believe that the workload has increased significantly. To conduct online classes, they need to rebuild subjects for online training, namely, record video lectures and

record screen demonstrations during practical sessions. Also, online correspondence with students takes a lot of the professor's time and effort but is not always satisfying. As the most significant challenges associated with the transition to online education, professors noted, "Much of the work for preparing training materials," said 67.4% of the respondents. We were interested in how the attitude towards online learning has changed during the pandemic in the opinion of teachers. The survey results showed that 48.8% of teachers believe that online education can use in higher education, 25.6% have not changed their opinion and 25.6% adhere to classical higher education (see Figure 10).

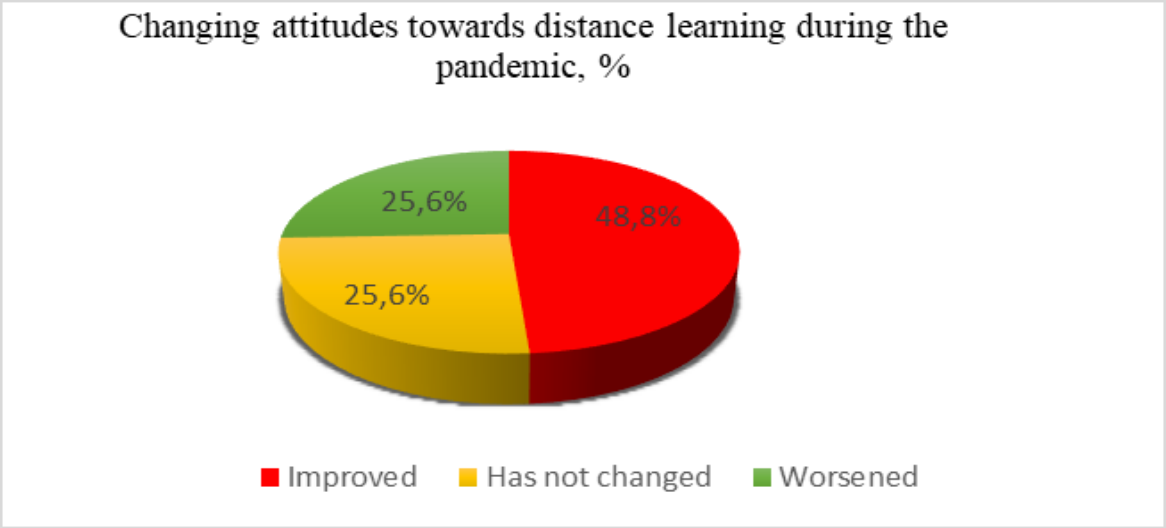

Figure 10. Changing Attitudes towards Distance Learning during the Pandemic, %

Thus, the survey results showed that most respondents (55.8%) are ready to use online learning in their teaching practice, and 37.2% believe that this requires much effort on the part of teachers who do not always give the expected result. We summarize, the results obtained indicate, in general, a positive attitude of teachers towards online learning, which will undoubtedly affect education in higher education in the future.

Discussion

In the extensive literature on various online education issues, we can highlight some articles, which deal with a variety of advantages and barriers that affect the development of online education. In the papers of Radha (2020), El-Seoud (2014), Ebner (2020), Alqahtani & Rajkhan (2020), the authors note that the main advantages of online learning are the rational use of time and the ability to improve students' skills. Students and professors are not

required to be directly present in the classroom, saving personal time and effort. Our study confirms this conclusion. The opinion of students and professors about e-learning has improved, and among students to a large extent. It may be due to high student engagement online. We confirmed that attitudes towards online learning enhanced over time (March to December 2020), which is consistent with the findings of other researchers (Radha et al., 2020; Raboca & Cotoranu, 2020). As the use of information systems in teaching became more familiar and familiar, the number of positive attitudes increased. The good Internet infrastructure also influenced the positive attitude towards e-learning in Moscow. Also, by the time of the transition to online, RUDN University already had an established information system. Both students and teachers did not experience technical problems. It confirms our opinion about the importance of IT development and Internet penetration in all regions of Russia.

Our research has confirmed that e-learning benefits from mobility and the ability to combine learning with other activities are essential for learners. Although this advantage can be a problem, as for 30% of students, responsibility has decreased. The article (Raboca & Cotoranu, 2020) notes a decrease in the effectiveness of online education during a pandemic compared to classical education. According to the authors, the reduction is associated with the negative influence of some factors (insufficient technical level of IT proficiency by students, learning difficulties, the need for teachers to adapt to online platforms, etc.). Our research has confirmed that 45% of professors report a decrease in students' level of motivation to learn. Teachers believe that outside the classroom it is difficult for a student to force himself to study, there are many distractions. In regular lectures, students are also distracted, but there are external incentives to engage in work. According to many educators, it is necessary to use Game-based learning to increase motivation (Doney, 2019). Our findings are consistent with the opinion of other authors (Vorbach, 2019), who obtained similar results, that the lack of self-discipline when passing MOOC or online training, lack of interaction with other students are the main obstacles in comparison to lectures with the obligatory visit to the universities. The fact of a decrease in the level of motivation requires a different approach to organizing online classes. We note that some items cannot be conducted online without quality degradation.

The most significant difficulty for students in the transition to online education was the implementation of practical work. We believe that it is necessary to have a video explaining

the implementation of the practical tasks to review the instructions for completing the tasks repeatedly. The increase in time spent on homework suggests that traditional discipline programs need to adapt for online learning. We also note that the most significant dissatisfaction of teachers with the results of e-learning may be associated with insufficient opportunities for actual control of attendance and monitoring of independent work. The modern student has a great temptation and enough ways to perform tasks not own, resorting to outside help. In contrast, the teacher has few opportunities for quality control of such costs of online education.

In general, the study carried out confirmed the benefits of e-learning, which coincides with the opinion of other authors (Aggarwal, 2017; Alexe, & Alexe, 2019; Catana, Manea & Titan, 2017). Our opinion that e-learning using Internet technologies is becoming a standard tool in the educational process in higher education, but insufficient, the use of blended education is necessary, confirms the findings of other authors (Al-Fraihat et al., 2020; Mishra, Gupta, & Shree, 2020). For the online learning process to be successful, more importance needs to be given to the transfer of responsibility: focusing on the individual learning process or continually improving the online academic learning process.

Conclusions

The dynamics of the capacity of the Russian online education market testifies to its exponential growth. All market participants finally recognize the online segment. Investors, educational organizations, and most importantly, users see online learning as a sustainable trend. In the segment of higher professional education, e-learning has taken its niche. The online learning experience gained during the pandemic will most likely be used even after all restrictions have been removed.

The study confirmed that online education is firmly entrenched in the educational services market and has some advantages noted by students and professors on the part of the students, the advantages highlight. These include the ability to combine study with work, a study in comfortable and familiar conditions, download materials, and view videos of lectures and seminars. At the same time, the fact is confirmed that stronger motivation and responsibility of students is needed, since the number of tasks increases and the time spent on mastering the material. We especially note that the implementation of practical tasks causes the most

significant difficulties in the e-learning process. It indicates the need to carefully use the opportunities of online education in the leading educational programs.

Professors prefer to use a computer to conduct classes and deliver lectures online. Given this fact, it is necessary to equip the audience with the required tools: PC, headphones, microphone, and video camera. Unfortunately, not all universities are ready for this, as it requires additional funding. Simultaneously, students prefer smartphones, which means that universities' software and information systems should be adapted for mobile devices.

Our results confirmed that all participants have adapted to this tool. Many teaching staff is developing their skills. The demand for IT training in education has increased, which will undoubtedly lead to an increase in the supply of online education. At the same time, students felt the advantages of this type of education. In the future, they will use it more intensively, not only for training in basic educational programs but also as programs for additional education, retraining, etc. We are already witnessing the emergence of digital master's programs in Russia, fully functioning in digital format.

The results indicate that online learning does not replace but complements and enriches the interaction formats between students and teachers. In higher education in basic educational programs, blended education (online and offline) has excellent prospects. E-learning is precisely the direction that needs to develop, improved and actively disseminated among educational institutions. It can complement traditional education with quality control and monitoring but not completely replace it in higher education.

Acknowledgements

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References

Aggarwal, V. (2017). E-Learning for Skill Training: Applications and Best Practices for the Public Sector. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3026964

Alexe, C. G., & Alexe, C. M. (2019). E-learning - facilitator tool for the development of technological entrepreneurship. *ELearning and Software for Education Conference*. https://doi.org/10.12753/2066-026X-19-094

Al-Fraihat, D., Joy, M., Masa'deh, R., & Sinclair, J. (2020). Evaluating E-learning systems success: An empirical study. *Computers in Human Behavior*, *102*. https://doi.org/10.1016/j.chb.2019.08.004

Allen E. I., Seaman J. (2015). Grade Level: Tracking Online Education in the United States. *Babson Survey Research Group and Quahog Research Group, LLC*. Retrieved 10 March 2021, from http://www.onlinelearningsurvey.com/reports/gradelevel.pdf

Almaiah, M. A., Al-Khasawneh, A., & Althunibat, A. (2020). Exploring the critical challenges and factors influencing the E-learning system usage during COVID-19 pandemic. *Education and Information Technologies*, *25*(6). https://doi.org/10.1007/s10639-020-10219-y

Alqahtani, A. Y., & Rajkhan, A. A. (2020). E-learning critical success factors during the COVID-19 pandemic: A comprehensive analysis of e-learning managerial perspectives. *Education Sciences*, *10*(9). https://doi.org/10.3390/educsci10090216

Balashova, S., Lazanyuk, I., & Matyushok, V. (2018). Growth Scenarios for the Russian Economy. In B. S. Sergi (Ed.), *Exploring the Future of Russia's Economy and Markets: Towards Sustainable Economic Development* (pp. 235–256). London: Emerald Publishing Limited. https://doi.org/10.1108/978-1-78769-397-520181013

Catana, A.; Manea, D.; Titan, E. (2017). The contribution of the e-learning projects to the quality of life in four regions for development during the programming period 2007–2013, Romania. *In Proceedings of the International Scientific Conference eLearning and Software for Education*, Volume 1, p. 351.

Doney, I. (2019). Research into effective gamification features to inform e-learning design. *Research in Learning Technology*, *27*. https://doi.org/10.25304/rlt.v27.2093

Ebner, M., Schön, S., Braun, C., Ebner, M., Grigoriadis, Y., Haas, M., Taraghi, B. (2020). COVID-19 epidemic as E-learning boost? Chronological development and effects at an Austrian university against the background of the concept of "E-learning readiness." *Future Internet*, *12*(6). https://doi.org/10.3390/FI12060094

Elektronnoe obuchenie (e-learning). Informatizacija i obrazovanie Elektronnoe obuchenie biblioteki FIS EGE programmy i Antiplagiat. (2021). Retrieved 13 April 2021, from http://hotuser.ru/distanczionnoe-obuchenie/1142--e-learning.

Infografika kto i skolko investiroval v startapy v pervoj polovine 2019 goda. Incrussia.ru. (2021). Retrieved 5 January 2021, from https://incrussia.ru/understand/infografika-2019-1.

Issledovanie rynka onlajn-obrazovanija. 2020. Research.edmarket.ru. (2021). Retrieved 13 April 2020, from https://research.edmarket.ru/.

Jansen D., Konings L. (2017). MOOC Strategies of European Institutions. *The OER knowledge cloud.* Retrieved 20 March 2021, from https:// erknowledgecloud.org/sites/oerknowledgecloud.org/files/MOOC_Strategies_of_European_ Institutions.pdf.

Margaryan, A., Bianco, M., & Littlejohn, A. (2015). Instructional quality of Massive Open Online Courses (MOOCs). *Computers and Education*, *80*. https://doi.org/10.1016/j.compedu.2014.08.005.

Mishra, L., Gupta, T., & Shree, A. (2020). Online teaching-learning in higher education during lockdown period of COVID-19 pandemic. *International Journal of Educational Research Open*, *1*, 100012. https://doi.org/10.1016/j.ijedro.2020.100012

Mozhaeva G. 2013. Elektronnoe obuchenie v vuze sovremennye tendencii razvitija. *Gumanitarnaja Informatika*, (3), 126-138.

Näykki, P., Laru, J., Vuopala, E., Siklander, P., & Järvelä, S. (2019). Affective Learning in Digital Education—Case Studies of Social Networking Systems, Games for Learning, and Digital Fabrication. *Frontiers in Education*, *4*. https://doi.org/10.3389/feduc.2019.00128

Novaja azbuka kak potrebnosti pokolenija Z menjajut onlajn-obrazovanie. Forbes.ru. (2021). Retrieved 14 January 2021, from https://www.forbes.ru/tehnologii/334449-novaya-azbuka-kak-potrebnosti-pokoleniya-z-menyayut-onlayn-obrazovanie.

Raboca, H. M., & Cotoranu, D. (2020). The Efficiency of the Online Academic Teaching Process During the Pandemic COVID-19. *Educatia 21*, (19), 118–126.

Radha, R., Mahalakshmi, K., Kumar, V. S., & Saravanakumar, A. R. (2020). E-Learning during Lockdown of COVID-19 Pandemic: A Global Perspective. *International Journal of Control and Automation*, *13*(4).

Revinova, S., & Lazanyuk, I. (2018). Prerequisites for development of the digital economy in RUSSIA: differentiation of regions. *International Journal of Business and Management Studies*. Retrieved from http://www.gks.ru/

Revinova, S., Lazanyuk, I. (2021). E-Learning Trends And Benefits: Russian Realities, *INTED2021 Proceedings*, pp. 1295-1304.

Rosenberg, M. (2001). E-Learning: Strategies for Delivering Knowledge in the Digital Age. *Mcgraw-Hill Education*.

Rossett A., Sheldon K. (2001). Beyond The Podium: Delivering Training and Performance to a Digital World. *San Francisco: Jossey-Bass/Pfeiffer*.

Samir Abou El-Seoud, M., Taj-Eddin, I. A. T. F., Seddiek, N., El-Khouly, M. M., & Nosseir, A. (2014). E-learning and students' motivation: A research study on the effect of e-learning on higher education. *International Journal of Emerging Technologies in Learning*, *9*(4). https://doi.org/10.3991/ijet.v9i4.3465

Tang, H. (2020). Implementing open educational resources in digital education. *Educational Technology Research and Development*. https://doi.org/10.1007/s11423-020-09879-x

Vorbach, S., Maria Poandl, E., & Korajman, I. (2019). Digital entrepreneurship education: The role of MOOCs. *International Journal of Engineering Pedagogy*, *9*(3).

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Chapter 7 - Secondary School Teachers' Levels of Integrating ICT Tools into Biology Teaching and Learning Process

Jean Jacques Munyemana, Florien Nsanganwimana, Gaspard Gaparayi

Chapter Highlights

- This study aimed at exploring the extent to which Rwandan secondary school Biology teachers integrate computer and other ICT technologies into teaching and learning process as well as the challenges they face as far as the use of ICT in teaching and learning biology is concerned.
- The descriptive research was used in this study, where 54 secondary school biology teachers were purposively selected from two district of Eastern province of Rwanda.
- Data were collected using questionnaires, interview schedule and observation protocol.
- The results showed that the majority of the asked biology teachers use computers and other ICT tools less frequently in their professional duties with strong emphasis on using computers for reading e-Books or downloading audio-visual materials from internet, though some of them use computers to prepare study materials such class notes.
- Photosynthesis was found to be the most topic taught by using computer where the resources used are simulation videos downloaded from internet, with the purpose to show students how things works.
- Though the biology teachers' attitude and self-efficacy towards the use of computer were positive, their major concern remains the lack of time to prepare computer based educational materials.
- All the teachers asked said that training about computers is necessary specifically on how to teach using computers, therefore there is need to consider such factors as far as the proper integration of ICT technologies into teaching and learning processes.

Introduction

The 21st century, is the age of information and technology (IT), the ICT tools including computers became part of human life in all sectors. ICT has transformed human activities, which consequently resulted in the production of large amount of flow of information in all fields across the world. Nowadays the information and technology are becoming popular in education sector. The use of ICT in education is divided into two main categories such as ICT for education and ICT in education(Noor-ul-amin, 2013). ICT for education is the way of using ICT for teaching purposes where it is used in preparation and presentation lessons in the classical method, while ICT in education is the process of using ICT in all aspects of teaching and learning process in an innovative way (Ugwu & Kingsley, 2019). Though the 21st century world has been described as a knowledge society, referring to the fast development of information and communication technologies (ICT) and associated practices, there has been criticism for School education for focusing on irrelevant skills and knowledge and ignoring the today's world demands (Valtonen, et. al, 2012) .It is in that line that the teachers development programs should focus also on the ICT integration in teaching and learning. Therefore, ICT is very important for Pre-service teacher education programme in the 21st Century. Without proper knowledge of ICT, the teacher may not use it in his/her teaching practice (Bhattacharjee & Deb, 2016).

ICT enhances the quality education, by contextualising teaching and learning practice even in the absence of pedagogical materials. Therefore, the adoption and use of ICT in education play a pivotal role in providing knowledge and skills needed for the 21st-century generation (Pineida, 2011). It has been found that ICT facilitates communication among students and teachers thus making learning flexible (Miguel, 2017). It also increases accessibility on teaching and learning resources which are needed in providing quality education. ICT has a potential role in innovation, acceleration, enrichment, and deepen skills for motivating and engaging students to work, practice, and developing competence for tomorrow's work (Yusuf, 2005). Therefore the use of ICT in instruction may be one of the best methods for providing quality education, mainly in developing countries (Wei, 2018).

Though ICT is beneficial as far as teaching and learning is concerned, there still challenges in implementation. There has found some misconceptions on the way of using ICT in the classroom amongst some teachers. In developing world, there still problems hindering the use

of ICT. Some of them do not see how ICT can be integrated in the teaching of all subjects and its importance, instead they only see ICT as a subject (Kennah, 2016), as they refer using ICT in the classroom as to teach students how to use basic ICT tools and software. This misconception on the way of using ICT in teaching and learning prevents the effective integration of ICT in teaching and learning process. Besides, there observed a gap in using ICT in lessons delivery due to possibly the level of computer literacy which is still very low in addition to teachers' challenge of finding extra planning time required to prepare Computer based materials, limitations in technical skills, and teachers' negative attitudes towards computer technology (Murray & Rabiner, 2014; Lambert, Gong, & Cuper, 2008; Bauer & Kenton, 2005; Buhungiro, 2014). All of the problems may be linked to ineffective use or use not at all ICT in teaching and learning processes.

In Rwanda from 2015 there have been implemented a new curriculum Competence based curriculum which focuses on equipping leaners competencies needed by them to flourish on the labor market. The curriculum stipulates the use of ICT tools including computers in classroom instruction, especially when no teaching materials are available or to foster students understanding (Rwanda Education Board, 2015). It is in that line that the government of Rwanda furnished more efforts to equip schools with state of the arts ICT tools to facilitate learning. Among others, the Government of Rwanda is providing each school at both primary and secondary level with a number of Smart Classrooms, which are technology enhanced classrooms that foster opportunities for teaching and learning by integrating learning technology, such as computers, digital content and specialized educational software, assistive technologies, audio-visual equipment and networking equipment. The Ministry of Education is also planning to provide all teachers with a laptop along the 40 hours training on ICT integration in education. Additionally there planned a gradual shift from print books to e-content as ICT infrastructure in schools is strengthen (Ministry of Education Rwanda, n.d.). These efforts show how Policy makers contemplate the role of ICT in strengthening the quality of education.

Though government is doing all the efforts to make sure that ICT is used in education, there is strong need to understand how far teachers are implementing and use the already available ICT tools in their profession. Researches have been carried out on understanding the teachers' use of ICT tools, however no many researches have been done on how specific subjects' teachers such as Biology Teachers use ICT tools in their profession. It is in that line

that this study was conceived with the intention of exploring the extent to which Rwandan Biology teachers integrate computer technology into teaching and learning process as well as the challenges they face as far as the use of ICT in teaching and learning biology is concerned.

Theoretical Background

This study was anchored on the Venkatesh, Morris, Davis, and Davis, (2003) theory called as the Unified Theory of Acceptance and Use of Technology (UTAUT). The UTAUT has the use behavior (UB) as the main variable defined as the degree to which a person accepts and uses a new technology. The authors regard the UB as a function of behavioral intention (BI) and facilitating conditions (FC). BI is a measure of the strength of one's intention to perform a specific behavior (Davis et al., 1989), while FC is the degree to which an individual believes that organizational and technical infrastructure required for the support of the technology exists (Venkatesh et al., 2003). Furthermore, BI is determined by performance expectancy (PE), effort expectancy (EE) and social influence (SI). The authors defined PE as the degree to which an individual believes that using the technology will help him or her to attain gains in job performance; EE as the degree of ease associated with the use of the technology; and SI as the degree to which an individual perceives that important others believe that he or she should use the technology (Luhamya et al., 2017).

According to the UTAUT theory, the influence of PE on BI is moderated by gender and age while that of EE on BI is moderated by gender, age and experience of the individual. Experience is the expertise one has as a result of using a particular technology. The influence of SI on BI is moderated by gender, age, experience and willing of use, the theory stressed that the direct influence of FC on UB is moderated by age and experience of an individual user of the technology in question.

In the context of this study, the actual of ICT use behavior was measured as the extent to which Biology teachers use ICT while performance expectancy was measured in the form of self-efficacy the moderating factors were determined by comparing both attitude and self-efficacy in terms of gender, age, experience with computers, degree of computer use and teaching experience. From that perspective the following research questions were formulated to be the guiding map of this study:

1) To what extent do biology teachers use ICT tools in their profession?
2) What are biology topics mostly taught using ICT tools and what are the reasons behind the choice of those topics?
3) What is the attitude and self-efficacy of biology teachers towards computers?
4) Are there differences on teachers' attitude and self-efficacy towards computers by demographic data findings?
5) What are the challenges teachers face vs a ICT integration in their profession and the opinions to improve the current situation?

Method

Descriptive research design was adopted in this research using both quantitative and qualitative approaches. Kothari, (2004) inspires the use of such design when there is a concern with describing the characteristics of a particular individual, or of a group, therefore being concerned with description of how biology teachers use ICT, this design was suitable for this case. This research was carried out in Rwamagana and Kayonza, two districts of eastern province of Rwanda. The total number of 54 biology teachers at both Ordinary Level and Advanced level were purposively selected to participate in this study. Data were collected using observation protocol which was used to analyses lesson plans in order to see how biology teachers project the use of ICT in classroom during preparation, and interview protocol which was used to collect data on the challenge and opinions towards ICT integration into teaching and learning. Data on the extent use of ICT and data on the teachers' attitude was measured using the adapted questionnaire developed by Christensen & Knezek, (2009). Data analysis were done using SPSS version 21 and data were statistically analyzed using descriptive statistics such as percentage and frequency and inferential statistics such as Mann Whitney Test and Kruskal Wallis test in comparing both teachers' attitude and self-efficacy in terms of gender, age, experience with computers, degree of computer use and teaching experience. The qualitative data was discussed along with the findings from the quantitative analytics. Data were presented in tables and graphs.

Results

This section illustrates the research finding and discussion of the findings. The research findings were presented according to the research questions.

The Extent to which Biology Teachers use Computers in their Profession

In order to investigate how biology teachers' use computer in their professional duties, teachers were asked to describe their experience about computers, how they use computers either in classrooms or preparation of lessons, and if they received training and the nature of training. Table 1 shows the results of this study.

Table 1. The Extent to which Biology Teachers use ICT in their Profession

Statement	**Frequency and Percentage (%)**
Interest in using computers	
Never Used Computer but want to Learn it	7(11.1)
Use of MS Word, PowerPoint, Excel Etc	9(16.7)
Use Computer for Classroom Instruction	38(70.4)
How often computers are used in classroom	
Daily	13(24.1)
Weekly	29(53.7)
Occasionally	12(22.2)
Number of hours per week	
Between 1-3 hours	34(63.0)
Between 4-6 hours	13(24.1)
Between 7-10 hours	6(11.1)
Between 11-13 hour	1(1.9)
Between 13-above	0(0.0)
Sharing computer resources with other teachers	
Yes	47(87.0)
No	7(13.0)
Means of sharing resources	
Email	8(14.8)
Flash disk	14(25.9)
CD/DVD	7(13.0)
Both Flash disk and CD/DVD	25(46.3)

Access to computer at home	
Yes	47(87.0)
No	7(13.0)
Internet facilities at home	
Yes	34(63.0)
No	20(37.0)
Use of computer to prepare lessons	
Yes	51(94.4)
No	3(5.6)
Computer resources used to prepare lessons	
Internet	40(74.1)
E-libraries	4(7.4)
both internet, E-books and E-library	10(18.5)
Type of computer training received	
No training	12(22.2)
basic computer literacy	19(35.2)
computer applications (MS word and Excel)	19(35.2)
how to use computers in classroom	4(7.4)
Where training received	
self-taught	12(22.2)
school district	2(3.7)
college or university	25(46.3)
from other colleagues	2(3.7)
seminars	2(3.7)

Amongst 54 biology teachers asked to describe their experience with computers, 11.1% of them said that they never used computer anywhere but are willing to learn it. On the other hand, 16.7% of teachers reported that they are familiar with basic computer applications such as Microsoft office Word, PowerPoint and many more. The majority of the biology teachers meaning 70.4% said that they use computers in classrooms during lesson delivery. On this point the teachers were interviewed to describe how they use computers, they reported that they use projectors connected to teacher's computer, and in some case, students may follow and do class works individually or cooperatively using personal computers when a smart classroom is used. The content is mostly displayed as multimedia in the form of audio-visual

and PowerPoint slides.

On how often computers are used in classroom, 24.1% of the teachers said they used it Daily, 53.7% use computer not daily but weekly whereas 22.2% use it occasionally. On this point, 63.0% of the teachers said that the time they use computer in their professional duties is between one hour to three hours per week, while 24.1% said they spend time between four to six hours per week when using computer in their professional duties. This implies the majority of the biology teachers use computers less frequently in their professional duties. The majority of biology teachers 87.0% said they can share computer-based teaching and learning resources, while 13.0% do not share based resources, with their colleagues. The means in which they this resource sharing happens, 46.3% of asked biology teachers use both Flash disks and CDs or DVDs, 14.8% use emails while 25.9% and 13.0% use respectively Flash disk and CD/DVD.

A large number of biology teachers 87.0% said that they can access to computer at home while 13.0% do not have access to computer at home. 63.0% reported that they can access internet facilities at home, whereas 37.0 % said they cannot access internet facilities at home. On the other hand 94.4% the asked biology teachers use of computer to prepare lessons, while a small fraction of teachers 5.6% do not use computers to prepare lessons. For instance 74.1% of the asked biology teachers use internet specifically world wide web for preparing lessons, 7.0% use e-libraries or eBooks while 18.5% use both internet, E-books and E-library during lesson preparation. On this point through lesson plan observation, it was observed that mostly they use computer for reading eBooks or downloading videos from internet as teaching materials.

About the type of computer training received 22.2% reported that No training they received, while 35.2% basic computer literacy, 35.2% received training on computer applications (MS word and Excel), only few biology teachers 7.4% received training on the use computers in classroom. Where training received, 22.2% were self-taught, 3.7% received training from schools, 46.3% received from college or university whereas 3.7% received training from colleagues and seminars.

Biology Topics taught using Computer

Biology teachers, were asked to describe the biology topics from Rwanda Education Bord Biology curricula (both Ordinary and Advanced levels biology curricula) taught using computer in the academic year 2019. Besides, the biology teachers were asked to give the reasons why their chose those topics to teach them using ICT. Table 2 and 3 show the results of this study.

Table 2. Biology Topics Covered Using Computer in the First Trimester of 2020

	Frequency and Percentage (%)
Biology topic	
Biological molecules	9 (17)
Laboratory safety and regulations	4(7)
Biological classification	3(6)
Cells	4(7)
Photosynthesis	11(20)
Flowering plants	1(2)
Organization and maintenance of life	1(2)
Ecology	2(4)
Osmosis and diffusion	1(2)
Digestive system	3(6)
Circulatory system	1(2)
Respiration	1(2)
Human skeleton	1(2)
Food test	2(4)
Respiratory system	2(4)
Reproductive system	1(2)
None	7(13)
Total	**54(100)**

The reasons made asked biology teachers to choose teaching using computers as summarized in Table 3, includes showing students how things work which is shared by 24.1% of the teachers, moving faster through curriculum the opinion concurred by 20.4% and lack of teaching aids opinion expressed by 14.8% of the interviewed teachers. 13.0% of the teachers said that there were no reasons since they did not use computers in lesson delivery. Other reasons include learners' motivation, stimulating learners' creativity and developing learners' research skills as well as enriching the content taught.

Teachers' Attitude and Self-efficacy towards Computers

Teachers' Attitudes towards Computers

A questionnaire were administered to biology teachers to rate their attitude towards to computer in education. The results of this study are shown on Table 3.

Table 3. Teachers' Attitude towards Computers

	Frequency and Percentage (%)				
Statement	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
Interest in using computers					
Working with computer is enjoyable and stimulating	1 (1.9)	1 (1.9)	0 (0)	9 (16.7)	43 (79.6)
willing to learn a lot about computers	1 (1.9)	1 (1.9)	1 (1.9)	9 (16.7)	42 (77.8)
Learning computers is exciting challenge	0(0)	0 (0)	2 (3.7)	24 (44.4)	28 (51.9)
I like learning on computer	0 (0)	0 (0)	0 (0)	26 (48.1)	28 (51.9)
I can learn many things when I use a computer	1 (1.9)	0 (0)	0 (0)	24 (44.4)	29 (53.7)
Anxiety towards computers					
I prefer to use more books than computer	19 (35.2)	15 (27.8)	9 (16.7)	2 (3.7)	9 (16.7)

I get sinking feeling when i think to use computer	23 (42.6)	10 (18.5)	8 (14.8)	9 (16.7)	4 (7.5)
It makes tense and uncomfortable to work with computer	31 (57.4)	12 (22.2)	2 (3.7)	9 (16.7)	0 (0)
working with computer makes me nervous	31 (57.4)	9 (16.7)	5 (9.3)	6 (11.1)	3 (5.6)
Computers are intimidating	38 (70.4)	7 (13.0)	5 (9.3)	4 (7.4)	0 (0)
Accommodation					
If had computer at my disposal would try to get rid of it	8 (14.8)	12 (22.2)	8 (14.8)	16 (29.6)	10 (18.5)
Studying about computer is waste of time	37 (68.5)	9 (16.7)	1 (1.9)	3 (5.6)	4 (7.4)
I cannot think any way that I will use computer in my teaching career	30 (55.6)	17 (31.5)	2 (3.7)	4 (7.4)	1 (1.9)
It takes along time to cover the content when I teach using computer	37 (68.5)	11 (20.4)	1 (1.9)	3 (5.6)	2 (3.7)
I see computer as something i will rarely use in my daily life	36 (66.7)	11 (20.4)	3 (5.6)	2 (3.7)	2 (3.7)
Concerns about computers					
Use of computer in education reduce personal treatment of student	38 (70.4)	10 (18.5)	3 (5.6)	2 (3.7)	1 (1.9)
I am afraid that if I teach using computer I will become dependent on them	27 (50.0)	20 (37.0)	2 (3.7)	4 (7.4)	1 (1.9)
Computer isolate people by inhibiting normal social interactions	33 (61.1)	12 (22.2)	3 (5.6)	5 (9.3)	1 (1.9)
Working with computers make me feel isolated from my colleagues	31 (57.4)	10 (18.5)	5 (9.3)	4 (7.4)	4 (7.4)
I feel apprehensive about using computer in teaching and learning activities	4 (7.4)	9 (16.7)	15 (27.8)	19 (35.2)	7 (13.0)
Computers can be used successfully with courses which demand creative activities	3 (5.6)	7 (13.0)	6 (11.1)	26 (48.1)	12 (22.2)

Communication					
I prefer e-mail to traditional class handouts as information dissemination	13 (24.1)	6 (11.1)	11 (20.4)	19 (35.2)	5 (9.3)
E-mail is an effective means of sharing class information and assignment to student	3 (5.6)	4 (7.4)	5 (9.3)	25 (46.3)	17 (31.5)
The use of email makes students feel more involved in the course	3 (5.6)	6 (11.1)	6 (11.1)	27 (50.0)	12 (22.2)
The use of email creates more interaction between students and teacher	2 (3.7)	1 (1.9)	2 (3.7)	27 (50.0)	22 (40.7)
Productivity					
Computer could increase my teaching performance	0 (0)	0 (0)	2 (3.7)	6 (11.1)	46 (85.2)
computer are necessary tools in both education and work setting	0 (0)	0 (0)	0 (0)	9 (16.7)	45 (83.3)
computer can be used usefully instructional aids in all subject areas	0 (0)	0 (0)	1 (1.9)	20 (37.0)	33 (61.1)
If there was computer in my classroom it would help me to be a better teacher	2 (3.7)	2 (3.7)	1 (1.9)	12 (22.2)	37 (68.5)
Teacher training should include instructional applications of computers	0 (0)	1 (1.9)	4 (7.4)	27 (50.0)	22 (40.7)
Significance					
It is important for students to learn about computer in order to be informed citizens	0 (0)	0 (0)	0 (0)	9 (16.7)	45 (83.3)
student should have an opportunity to learn about computers at school	0 (0)	1 (1.9)	0 (0)	18 (33.3)	35 (64.8)
students should understand the role computer paly in society	0 (0)	1 (1.9)	0 (0)	18 (33.3)	35 (64.8)
Computer could stimulate creativity in student	0 (0)	0 (0)	1 (1.9)	17 (31.5)	36 (66.7)
computer could improve remedial instruction	0 (0)	0 (0)	2 (3.7)	34 (63.0)	18 (33.3)

Results from Table 3 revealed the biology teachers' attitude towards computers. When it comes to interest in using computers, 79.6% of biology teachers strongly agreed that working with computers is enjoyable and stimulating. A fraction of total 94.5% of teachers said that they are willing to learn a lot about computers. While the total 96.3% of teachers shared the view that learning computers is exciting challenge. All the teachers, meaning 100% liked learning on computer, and 44.4% and 53.7% respectively agreed and strongly agreed that they can learn many things when I use a computer. The data shows that biology teachers ask, expressed their interests in using computers.

On the side on the anxiety towards computers, biology teachers are generally not anxious about computers. For instance, 63% disagreed that they prefer to use more books than computer only few (total 20.4%) prefer using books more than computers. A portion of 61.1% of the biology teachers asked perceived that they do not get sinking feeling when they think to use computers. A 78.7% of the teachers said that it does not make tense and uncomfortable to work with computer. While 74.1% of biology teachers, disagreed that working with computer make them nervous. Whereas 83.4% of the teachers asked are not intimidated with computers.

On the accommodation part, a large part of the teachers, 48.1% shared the opinion that if they had computer at their disposal would try to get rid of it, 37% disagreed whereas 14.8% remained undecided towards the idea. The total 85.2% of the teachers asked, disagreed with the claim that studying about computer is waste of time, 88.9% of the teachers felt that it does not takes a long time to cover the content when they teach using computer. And 87.1% of the teachers said that they do not see computer as something they will rarely use in their daily life.

On the side of the concerns about computers, 88.9% of the teachers disagreed with the statement that the use of computer in education reduce personal treatment of student. A fraction of 87% the teachers felt that if they teach using computer, they are not afraid that they will become dependent on them. A portion of 83.3% of the teachers disagreed that computers isolate people by inhibiting normal social interactions, while 57.4% and 18.5% respectively strongly disagreed and disagreed that working with computers make them feel isolated from their colleagues. On the idea that feeling apprehensive about using computer in teaching and learning activities, 48.2% shared the idea, 27.8% remained neutral, while 24.1%

disagreed. While 70.3% agreed with the claim that computers can be used successfully with courses which demand creative activities. These data shows that the majority of the teachers asked have no concerns about using computers in their profession.

On communication part, 44.5% of the teachers agreed while 35.2% disagreed that they prefer e-mail to traditional class handouts as information dissemination. While 77.8% of the teachers agreed that e-mail is an effective means of sharing class information and assignment to student. 72.2% of the teachers agreed that the use of email makes students feel more involved in the course. Whereas 90.7% agreed that the use of email creates more interaction between students and teacher.

On the role computers in productivity**,** 96.3% of the teachers agreed that Computer could increase their teaching performance. While all the teachers meaning 100% perceived that computers are necessary tools in both education and work setting, 98.1% of the teachers asked felt that computer can be used usefully instructional aids in all subject areas. A portion of 90.7% agreed that if there was computer in their classroom it would help them to become better teachers. Furthermore 90.7% of the teachers perceived that teacher training courses should include instructional applications of computers.

On the Significance of computers, 100% agreed that it is important for students to learn about computer in order to be informed citizens. And 98.1% agreed that students should have an opportunity to learn about computers at school. The portion of 98.1% of the teachers asked felt that students should understand the role computers play in society. While 98.2% of the teachers agreed that Computer could stimulate creativity in student, and 96.3% of the teachers agreed that computer could improve remedial instruction. Therefore, the majority of the teachers asked embrace the role computers play in the teaching and learning process.

Based on the data presented in Table 4, it can be seen that biology teachers who participated in this study are interested in using computers, and are neither intimidated nor concerned with using computers in their daily duties. The biology teachers embrace the role of computers in teaching and learning, as well as productivity and communication in general. Therefore, it can be concluded that the majority of the biology teachers who participated in this study expressed a positive attitude towards the use of computer for teaching and learning purpose.

Teachers' Self-efficacy towards Computers

Teachers were asked to rate their self efficacy towards the use of computers. Table 4 summarizes the results from this investigation.

Table 4. Teachers' Self-Efficacy towards Computes

Statement	Frequency and Percentage (%)				
	Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
Computer do not scare me at all	8 (14.8)	4 (7.4)	2 (3.7)	6 (11.1)	34 (63.0)
I feel comfortable with teaching using computer	3 (5.6)	3 (5.6)	2 (3.7)	15 (27.8)	33 (61.1)
I need strong mastery of computers for my future work	3 (5.6)	0(0)	0(0)	30 (55.6)	21 (38.9)
I do not think that I could handle a computer course	9 (16.7)	18 (33.3)	8 (14.8)	12 (22.2)	7 (13.0)
I have a lot of self-confidence when it comes to working with computer	3 (5.6)	2 (3.7)	0(0)	12 (22.2)	37 (68.5)
I can use different versions of available operating systems	8 (14.8)	4 (7.4)	2 (3.7)	6 (11.1)	34 (63.0)
I can prepare activities for learners' sharing files	1 (1.9)	3 (5.6)	2 (3.7)	15 (27.8)	33 (61.1)
I can give feedback to learners concerning their academic achievement via internet	3 (5.6)	3 (5.6)	5 (9.3)	27 (50.0)	16 (29.6)
I can use the evaluation tools peculiar to ICT	8 (14.8)	12 (22.2)	9 (16.7)	16 (29.6)	9 (16.7)
I can recognize threats from the internet and take measures against them	3 (5.6)	2 (3.7)	6 (11.1)	12 (22.2)	31 (57.4)

I can develop instructional materials by using desktop publishing software applications	8 (14.8)	4 (7.4)	2 (3.7)	6 (11.1)	34 (63.0)
I can enrich learning activities using animation programs	4 (7.4)	6 (11.1)	5 (9.3)	15 (27.8)	24 (44.4)
I can record learners' results in a computer environment	2 (3.7)	2 (3.7)	5 (9.3)	24 (44.4)	21 (38.9)
I can set up ICT systems appropriate to classroom instruction	3 (5.6)	3 (5.6)	3 (5.6)	17 (31.5)	28 (51.9)

Results displayed in Table 4 shows that the majority of the teachers are not scared by computers where 63.0% and 27.8% were respectively strongly agreed and agreed with the opinion. While 61.1.% and 27.8% respectively strongly agreed and agreed that they are comfortable using computer to teach, the total percent of 90.7% of the teachers asked, reportedly to have lot of self-confidence when it comes to working with computers. The large fraction 68.5% of biology teachers said that they I can use different versions of available operating systems, while 50% of the biology teachers agreed that they can give feedback to learners concerning their academic achievement via internet.

The total percent 72.2% of biology teachers felt that they can develop instructional materials by using desktop publishing software applications on the other hand the total percentage 83.4% of the teachers participated in this study perceived that they can set up ICT systems appropriate to classroom instruction. Despite that in general teachers feel that they are able to use computers, there is strong need of mastering computers for future teachers' work as agreed by 55.6% and 38.9% strongly agreed with the perception.

Comparative Findings on Teachers' Attitude and Self-efficacy towards Computers by their Demographic Data

Comparative Findings on Teachers' Attitude and Self-efficacy towards Computers by Age

In order to examine whether there is a statistically significant difference between the teachers' attitude, self-efficacy towards computers by their age, Mann-Whitney U test was employed. The results from this test are displayed in Table 5.

Table 5. Comparison of Teachers' Attitude and Self-Efficacy towards Computers by Age

Factors	Age groups	N	Mean Rank	Chi-Square	df	F	Sig.
Biology Teachers' attitude towards computers	18-25	7	27.00	2.848	3	.964	.417
	26-30	25	29.94				
	31-35	17	25.68				
	36-40	5	22.20				
Biology teachers' self-efficacy towards computers	18-25	7	30.86	1.996	3	.594	.622
	26-30	25	27.14				
	31-35	17	25.15				
	36-40	5	32.60				

Given in Table 5, the results displayed that there is no significant difference between biology teachers' attitude, by their ages, F (3-50) = .964; p > .05; similarly their self-efficacy towards computers is not different in terms of their ages F (3-50) = .594; p > .05.

Comparative Findings on Teachers' Attitude and Self-efficacy towards Computers by Gender

A Mann-Whitney U test was employed in order to examine whether there is a statistically significant difference between the teachers' attitude, self-efficacy towards computers by their gender. The results from this test are displayed in Table 6.

Table 6. Comparison of Teachers' Attitude and Self-Efficacy towards Computers by Gender

Factors	Gender	N	Mean Rank	Mann-Whitney U	Wilcoxon W	Z	Sig.
Attitude towards computers	Male	23	26.02	322.500	598.500	-.847	.397
	Female	31	28.60		-	-	-
Computers self-efficacy	Male	23	27.91	347.000	843.000	-.211	.833
	Female	31	27.19		-	-	-

The results from Table 6 show that there is no statistical significance between male and female teachers in terms of their attitude towards computers (U = 322.5, p =. 397). Similarly, they are not different in terms of their computer self-efficacy (U= 347, p= .833).

Comparative Findings on Teachers' Attitude and Self-efficacy towards Computers by their Experience with Computers

In order to ascertain the possible difference of biology teachers' attitude and self efficacy towards computers by their experience with computers, a Kruskal Wallis test was run. The results are shown in Table 7.

Table 7. Comparison of Teachers' Attitude and Self-efficacy towards Computers by Experience with Computers

Factors	Experience with computers	N	Mean Rank	Chi-Square	df	Sig.
Attitude	never used computer but want to learn it	6	31.08			
	use of MS word, excel etc	9	27.06	.710	2	.701
	use computer for classroom instruction	39	27.05			
Self-efficacy	never used computer but want to learn it	6	13.00			
	use of MS word, excel etc	9	33.11	10.291	2	.006
	use computer for classroom instruction	39	28.44			

A Kruskal-Wallis H test showed that there was a statistically significant difference in computer self-efficacy between the different experience with computer, $\chi^2(2) = 10.291$, $p = .006$. Similarly, the same test showed no statistical difference in biology teachers' attitude towards computers by their experience with computers $\chi^2(2) = .710$, $p = .701$.

Comparative Findings on Teachers' Attitude and Self-efficacy towards Computers by their Frequency of Use Computers

In order to ascertain the possible difference of biology teachers' attitude and self-efficacy towards computers by their frequency of computers use, a Kruskal Wallis test was performed. The results are shown in Table 8.

Table 8. Comparison of Teachers' Attitude and Self-Efficacy towards Computers by Frequency of Use Computers

	Frequency of use	N	Mean Rank	Chi-Square	df	Sig.
Attitude	Daily	13	28.88			
	Weekly	29	28.72	2.515	2	.284
	Occasionally	12	23.04			
Self-efficacy	Daily	13	29.54			
	Weekly	29	28.05	1.391	2	.499
	Occasionally	12	23.96			

The Kruskal-Wallis H test showed that there was no statistically significant difference in biology teachers' computer self-efficacy by their frequency of computer usage, $\chi^2(2) = 1.391$, $p = .499$, similarly the same test showed no statistical difference in Teachers' attitude towards computers by their frequency of computer use $\chi^2(2) = 2.515$, $p = .284$.

Comparative Findings on Teachers' Attitude and Self-efficacy towards Computers by their Teaching Experience

In order to ascertain the possible difference of biology teachers' attitude and self-efficacy towards computers by their frequency of computers use, a Kruskal Wallis test was performed. The results are shown in Table 9.

Table 9. Comparison of Teachers' Attitude and Self-efficacy towards Computers by Teaching Experience

Factors	**Teaching experience**	**N**	**Mean Rank**	**Chi-Square**	**df**	**Sig.**
Attitude towards computers	0-1 years	3	27.00	2.848	3	.292
	2-5 years	21	28.17			
	6-10 years	23	29.20			
	11-15 years	7	20.14			
Computers self-efficacy	0-1 years	3	28.00	1.996	3	.992
	2-5 years	21	27.90			
	6-10 years	23	26.89			
	11-15 years	7	28.07			

The Kruskal-Wallis H test showed that there was no statistically significant difference in biology teachers' computer self-efficacy by their teaching experience, $\chi^2(2) = 1.996$, $p = .992$, similarly the same test showed no statistical difference in Teachers' attitude towards computers by their teaching experience $\chi^2(2) = 2.848$, $p = .292$.

Challenges associated with Use of Computer during Lesson Delivery

Teachers were asked to state the challenges which prevent them to efficiently use computer in their profession including teaching and learning. The lack of time to prepare computer based educational materials is the main problem hampering teachers use computers. Other challenges include lack of training, slow internet connection and extra classes to teach. Figure 1 summarizes teachers' opinions to this question.

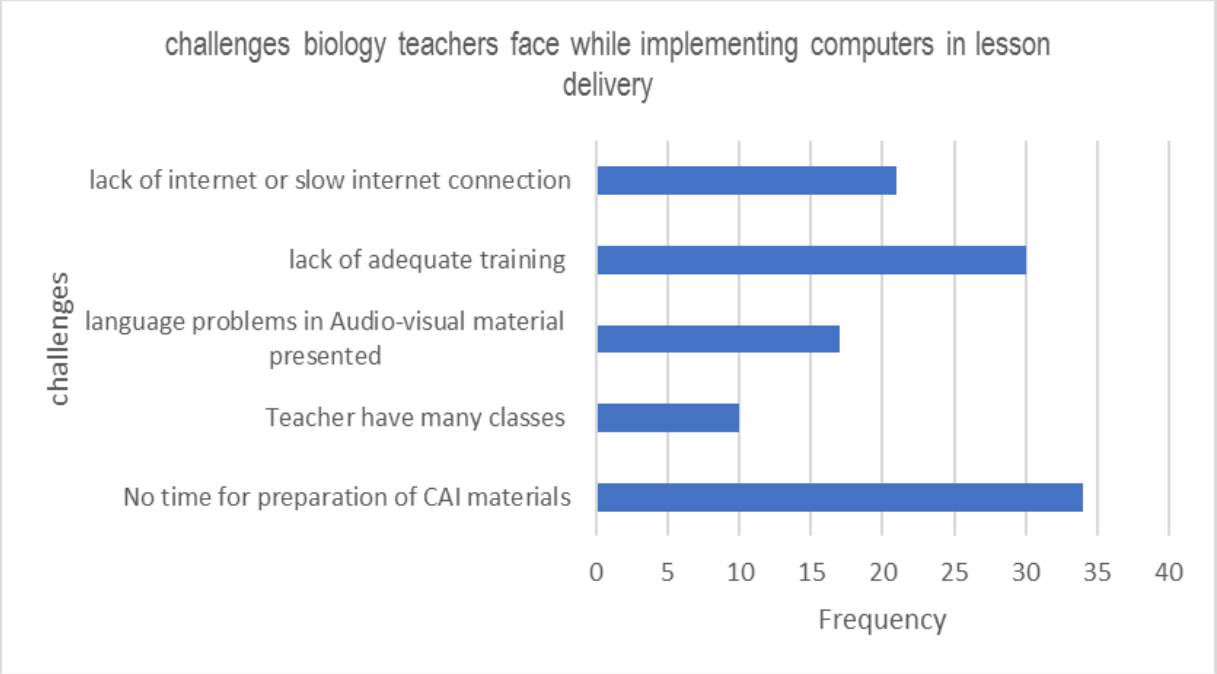

Figure 1. Challenges Biology Teachers Face While Implementing Computers in Lesson Delivery

Biology Teachers' ICT Skills Wishes to Receive in Future Training

During interviews Biology teachers were challenged to opine about the skills they would like to receive in any training being prepared for them in order to improve the current situation. When answering this question, all the teachers asked said that training about computers is

necessary. When asked which skills they would like to receive if the training is being prepared for them, they had divided opinions, but the majority shared the idea of receiving training on how to teach using computers while others opined that basic training of using computer, searching content on the internet and many more. The summary of the responses on this question is provided in Table 10.

Table 10. Biology Teachers' Skills Needed according to their Opinions

Computer skills	f
how to select a good audio-video material on the internet	8
how to search your subjects content using internet	8
how to design a good power point material	7
basic skills for using computer	8
how to teach using computers	23
how to select a good audio-video material on the internet	8

Discussion

The present study investigated the extent to which biology teachers use ICT in their profession, their attitudes of teachers towards computers, computer self-efficacy, the challenges they face with ICT usage and opinions to improve the current situation. This study also investigated biology teachers 'attitudes, self-efficacy towards computers differ in subject to the variables, such as gender, age, teaching experience, computer experience, and frequency of computers usage. While it is believed that effective incorporation of ICT in teaching and learning in an educational setting may be influenced by many interrelated factors, including teacher, school and national level conditions, still teachers have a central role in integration of ICT in their classes. Thus, improving teachers' ICT skills, and their attitudes are critical to an effective integration of ICT in school settings.

Results in Table 1 show that the majority of the biology teachers meaning 70.4% said that they use computers in classrooms during lesson delivery, results which are not far from the finding reported by Buza and Freskina Mula, (2017) who observed that only 8% of the teachers do not use ICT at all during the teaching process, implying that the majority of the teachers use ICT in classroom. Even though teachers use computers in classroom, the time

they spent in using computers is short, and it was found that 71.7% of teachers perceived that time to prepare ICT materials is constraint for integration in the classroom, the result also echoed by Mahdum, Hadriana, and Safriyanti, (2019). Finding extra time to prepare computer based materials is still major challenge that teachers are facing (Bauer & Kenton, 2005; Morris, 2010) and can prevent teachers' use of computers in classroom.

A large number of biology teachers reportedly to have access to computers and internet facilities at home, similarly results Ngeze, (2017) reported that 69.3% the teachers owned laptops. When teachers have access to computers at their homes they can prepare lessons wherever they are even at home, as evidenced by the findings of this study where 94.4% of the asked biology teachers use of computer to prepare lessons. Similarly Ngeze, (2017) reported that teachers apply ICT skills in preparation of lessons, exam, lesson plans and teaching aids.

For instance 74.1% of the asked biology teachers use internet specifically world wide web for preparing lessons, 7.0% use e-libraries or eBooks while 18.5% use both internet, E-books and E-library during lesson preparation. On this point through interview, it was observed that mostly biology teachers use computer for reading eBooks or downloading videos from internet as teaching materials. Similarly, Turel (2014) found that the big percentage of the teachers participated in the study uses the Internet and conventional books in preparing teaching notes.

Amongst the reasons making teachers' use computers and others ICT tools in teaching and learning include as reported in Table 3 include learners' motivation. The finding is similar to De Aldama and Pozo, (2016) results, where they reported that 56.25% of the teachers perceived ICT as good for motivating students. It is believed that in order to achieve the quality of education, ICT can be used for increasing students' motivation and interaction (Banerjee & Das, 2014; Gumus et al., 2021). The motivational aspects of ICT in education include; increased commitment for learning, increased enjoyment, increased esteem as well as increased independence and confidence (Don & Colin, 2014). The use of ICT in teaching and learning process does not only mean what students should learn but also how students learn and provision of the new way of presenting learning content. This may increase students' motivation and engagement. In this line, ICT has found to be very important in teaching and learning science which is somehow complex and less motivating for some

students. By using simulations, ICT makes complex process in science easy to understand thus making learning more motivating and enjoyable

Results from this study revealed that Teachers' attitude towards computers is positive. Similarly (Semerci, 2018), reported that in his study that the teachers had a high level positive overall attitude towards ICT. Furthermore these results are overlapped with the findings that teachers produced positive attitudes towards ICT use in education(Lau & Sim, 2008) When teachers demonstrate a positive attitude towards computers, they eager to implement computer based instruction in their normal duties including lesson delivery.

Results in Table 5 show that the majority of the teachers asked, believed that they can handle computers and use them in their daily works. The results concurs with Mahdum, Hadriana, and Safriyanti, (2019) findings, where the researchers reported that many teachers believed in their ability and knowledge to use ICT in learning activities. Catarina, (2012) reiterated that self-efficacy of using ICT in education will have a direct effect on the use of ICT by teachers. This claim was echoed by Player-Koro, (2012) who argued that teachers who judge themselves as having the capability to use ICT in education also use ICT in classrooms because they also believe (and have the experience) that it will benefit their pedagogical work and contribute to students' learning. Therefore, findings from this study are cheerful, since This is good point as far as the use of computers in classroom is concerned, because when teachers' believe in their knowledge and skills they will likely use computers in lesson delivery.

The majority of the teachers said that they do not have enough time to prepare and use ICT based materials in classrooms. Additionally, having more classes is also a major constraint for successful ICT integration in education. These results parallel the results reported by Vrasidas et al., (2010), where the researchers found that 81.4% of teachers face the challenge of the length of the curriculum that needs to be covered during the year. Having a lot workload in addition to overloaded curricula will prevent teachers to use ICT tools and therefore they can still stick on the use of traditional methods which are reportedly to favor teachers moving faster in the curriculum

Another major setback as far as ICT integration in lesson delivery is concerned, is the internet connection which is slow and sometimes absent. Similarly, Mahdum, Hadriana, and

Safriyanti, (2019) reported that Internet connection which is often unstable is one of the obstacles that the teachers face vis a vis ICT use in the classroom. Consequently, teachers may decide to bypass the use of ICT in their daily duties.

The lack adequate training or technological skills to use ICT tools is also another major constraint hampering teachers to use in lesson delivery. This finding concurs with the results of Mahdum, Hadriana, and Safriyanti, (2019) Lack of the right skills and knowledge will be a barrier for teachers to use ICT and it can cause teachers to become discouraged and have negative views on the use of ICT. Views will influence the attitudes of teachers towards the application of ICT Albirini, (2006).

Furthermore, the attitude of teachers will have a significant impact on their behaviors in responding to the use of ICTs (Badri et al., 2013). This is no surprise that the majority of the teachers asked restressed on the need of training on use of computers in education. All the challenge reported here are not surprising because they are cosmopolitan in other part of the world specifically in developing countries (Bingmlas, 2009). Even if there are some challenges preventing teachers' use of computers in the classroom, the study participants felt what can be done to improve the current situation. All the study participants echoed the training is necessary. Among the skills needed include how to teach using computers.

Conclusion

The aim of this study was to explore the extent to which Rwandan Biology teachers integrate computer technology into teaching and learning process. The results shown that the minority the biology teachers participated in this study never used computers though they willing to learn it. Those who use ICT tools in their profession, use them to prepare lessons as well as finding instructional resources. The attitude and self-efficacy towards ICT of biology teachers were found to be positive, though the time that computers and other ICT tools used in classrooms is very short due to possibly the workload and overloaded biology curriculum which prevents teachers to find time to prepare ICT based learning materials. Therefore, to properly integrate ICT tools into teaching and learning biology these factors should be worked on.

References

Albirini, A. (2006). Teachers' attitudes toward information and communication technologies: The case of Syrian EFL teachers. *Computers and Education*, *47*(4), 373–398. https://doi.org/doi.org/10.1016/j.compedu.2004.10.013

Badri, M., Al Rashedi, A., & Mohaidat, J. (2013). School teachers ' technology readiness – An empirical study applying readiness factors and teacher type categorization. *Proceedings of the 2013 International Conference on Information, Business and Education Technology (ICIBET 2013)*, 991–994. https://doi.org/10.2991/icibet.2013.124

Banerjee, N., & Das, A. (2014). Impact of Ict on Science Learning To Enhance Motivation of Secondary Level Students : An Analytical Study. *IOSR Journal Of Humanities And Social Science (IOSR-JHSS)*, *19*(7), 19–23.

Bauer, J., & Kenton, J. (2005). Toward technology integration in the schools: Why it isn't happening. *Journal of Technology and Teacher Education*, *13*(4), 519–546.

Bhattacharjee, B., & Deb, K. (2016). Role of ICT in 21st Century's Teacher Education. *International Journal of Education and Information Studies*, *6*(1), 1–6. http://www.ripublication.com

Bingmlas, K. A. (2009). Barriers to the successful integration of ICT in teaching and learning environments: A review of the literature. *Eurasia Journal of Mathematics, Science and Technology Education*, *5*(3), 235–245. https://doi.org/10.12973/ejmste/75275

Buhungiro, E. (2014). ICT in Rwanda schools. *The New Times*. https://mail.google.com/mail/u/0/#inbox/164043cce502d5ac

Buza, K., & Freskina Mula, M. (2017). The role of the Teachers in the integration of ICT in Teaching in Secondary Low Education. *European Journal of Social Sciences Education and Research*, *4*(4), 240–247. http://journals.euser.org/files/articles/ejser_may_august_17_nr_2/Kastriot.pdf

Catarina, P. (2012). Factors influencing teachers' use of ICT in education. . . *Education Inquiry*, *3*(1), 93–108. https://doi.org/10.3402/edui.v3i1.22015

Christensen, R. W., & Knezek, G. A. (2009). Attitudes Toward Computers Questionnaire. *Journal of Computing in Teacher Education*, *25*(4), 143–155.

De Aldama, C., & Pozo, J. I. (2016). How are ICT used in the classroom? A study of teachers' beliefs and uses. *Electronic Journal of Research in Educational Psychology*, *14*(2), 1696–2095. https://doi.org/10.14204/ejrep.39.15062

Don Passey & Colin G Rogers. (2014). The Motivational Effect of ICT on Pupils. *ResearchGate*, *January 2004*.

Gumus, M. M., Cakir, R., Korkmaz, O., & Ugur Erdogmus, F. (2021). Analysis of IT Acceptance Levels, ICT Attitudes, and Individual Innovation Levels of Special Education Teachers and their Opinions. *International Journal of Technology in Education (IJTE), 4*(3), 553-588. https://doi.org/10.46328/ijte.87

Kennah, M. R. (2016). *The Use of ICT in the Teaching and Learning Process in Secondary Schools : A Case Study of Two Cameroonian schools*. University of Jyväskylä.

Kothari, C. (2004). Research methodology: methods and techniques. In *Vasa* (2nd Revise). New Age International (P) Ltd. https://doi.org/http://196.29.172.66:8080/jspui/bitstream/123456789/2574/1/Research%20Methodology.pdf

Lambert, J., Gong, Y., & Cuper, P. (2008). Technology, transfer and teaching: The impact of a single technology course on preservice teachers' computer attitudes and abilities. *Journal of Technology and Teacher Education*, *16*(4), 385–410.

Lau, T. B., & Sim, H. C. (2008). Exploring the extent of ICT adoption among Secondary school teachers In Malaysia. In *International Journal of Computing and ICT Research* (Vol. 2, Issue 2). http://www.ijcir.org/volume2-number2/article3.pdf.

Luhamya, A., Bakkabulindi, F. E. K., & Muyinda, P. B. (2017). *Integration of ICT in Teaching and Learning : A Review of Theories*. *9*(1), 21–36.

Mahdum, M., Hadriana, H., & Safriyanti, M. (2019). Exploring teacher perceptions and motivations to ICT use in learning activities in Indonesia. *Journal of Information Technology Education: Research*, *18*, 293–317. https://doi.org/10.28945/4366

Miguel, D. (2017). How Technology Improves Teacher Student Communication. In *Macro connect. Technology for education*.

Ministry of Education Rwanda. (n.d.). *ICT in Education Master Plan*. Retrieved April 6, 2018, from https://ictedupolicy.org/system/files/ict4e_master_plan-summary-final_ministry_of_education_rwanda.pdf

Morris, D. (2010). Are teachers technophobes? Investigating professional competency in the use of ICT to support teaching and learning. *Procedia - Social and Behavioral Sciences*, *2*(2), 4010–4015. https://doi.org/10.1016/j.sbspro.2010.03.632

Murray, D. W., & Rabiner, D. L. (2014). Teacher Use of Computer-Assisted Instruction for Young Inattentive Students: Implications for Implementation and Teacher Preparation. *Journal of Education and Training Studies*, *2*(2), 58–66.

https://doi.org/10.11114/jets.v2i2.283

Ngeze, V. L. (2017). ICT Integration in Teaching and Learning in Secondary Schools in Tanzania: Readiness and Way Forward. *International Journal of Information and Education Technology*, *7*(6), 424–427. https://doi.org/10.18178/ijiet.2017.7.6.905

Noor-ul-amin, S. (2013). An effective use of ICT for education and learning by drawing on worldwide knowledge , research and experience : ICT as a change agent for education (A Literature review). *Scholarly Journal of Education*, *2*(4), 38–45.

Pineida, F. O. (2011). Competencies for the 21st century: Integrating ict to life, school and economical development. *Procedia - Social and Behavioral Sciences*, *28*, 54–57. https://doi.org/10.1016/j.sbspro.2011.11.011

Player-Koro, C. (2012). Factors Influencing Teachers' Use of ICT in Education. *Education Inquiry*, *3*(1), 93–108. https://doi.org/10.3402/edui.v3i1.22015

Rwanda Education Board. (2015). *Advanced Level Biology Syllabus*.

Semerci, A. (2018). Examining High School Teachers ' Attitudes towards ICT Use in Education. *International Journal of Progressive Education*, *14*(2), 93–105.

Turel, V. (2014). teachers' computer self-efficacy and theır use of educatıonal technology. In *Turkish Online Journal of Distance Education*.

Ugwu, P., & Kingsley, N. U. (2019). The Concept And Applıcatıon Of Ict To Teachıng / Learnıng Process. *ResearchGate*, *6*(2).

Valtonen, T., Mäkitalo-Siegl, K., Kontkanen, S., Pöntinen, S., & Vartiainen, H. (2012). Facing Challenges with New Teachers' Use of ICT in Teaching and Learning. *Bulletin of the IEEE Technical Committee on Learning Technology*, *14*(4), 46–49. https://doi.org/10.1111/j.1365

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, *27*(3), 425–478.

Vrasidas, C., Pattis, I., Panaou, P., Antonaki, M., Aravi, C., Avraamidou, L., Theodoridou, K., & Zembylas, M. (2010, May 1). Teacher Use of ICT: Challenges and Opportunities. *Proceedings of the 7th International Conference on Networked Learning 2010*.

Wei, H. A. N. (2018). ICT Promoting the Improvement of Education Quality : Experience and Practice. *UNESCO*.

Yusuf, M. O. (2005). Information and communication technology and education : Analysing the Nigerian national policy for information technology. *International Education Journal*, *6*(3), 316–321.

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Chapter 8 - The Relationship between Instructional Leadership and Commitment to Change in Implementing Educational Change

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Chapter Highlights

- The aim of this quantitative correlational study is to investigate the relationship between principal instructional leadership and three dimensions of teacher commitment to change in implementing School-Based Assessment (SBA) among secondary school teachers in Selangor, Malaysia.
- The data was obtained from 402 secondary teachers through stratified random sampling.
- The data was collected using an adapted questionnaire to measure principal instructional leadership and teacher commitment to change.
- Data was analysed using SPSS in the form of mean, standard deviation, and Pearson correlation analysis.
- The findings showed that the level of instructional leadership of the principal as a whole was high with a mean of 3.70 and standard deviation 0.57.
- The level of affective commitment to change among the teachers was high with a mean of 4.16 and standard deviation of 0.67, while normative commitment to change was also high with a mean of 3.90 and standard deviation of 0.63.
- However, continuance commitment to change showed a low mean of 2.02 with standard deviation of 0.83.
- The findings revealed there were significant relationships between principal instructional leadership and the three dimensions of teacher commitment to change.
- This study offered a new perspective in the educational field by proving the impact of instructional leadership on the three dimensions of commitment to change.

Introduction

The world of education is changing rapidly due to the effects of globalisation, liberalisation and information technology (IT) revolution (Guerrero et al., 2018; Thien & Adams, 2021; Yalçın et al., 2021). Therefore, national educational policymakers must embrace transformations and encourage continuous improvements in the education sector to achieve the standard of global excellence (Fullan, 2007). It has been noticed that schools or educational institutions have been experiencing different types of alterations both from within and outside of their respective organisations, leading to a constantly adapting teaching and learning environment wherein the ultimate goal of these changes is to enhance the teaching and learning process (Mohammed Sani & Mohd Izham, 2012). Berkovich (2011) had delineated those educational reforms must be initiated by the government to improve school management and operations and student learning outcomes. However, the implementation of metamorphosis within educational institutions often leads to unsuccessful results due to certain factors, such as negative emotional responses of the pedagogues including uncertainty and anxiety, and the difficulty in accepting necessary changes (Riaz et al., 2020; Yan, 2012). In addition, Berkovich (2011) discovered another factor that produces unavailing outcomes from educational reforms was the conflict of values and interests of its stakeholders, similar to the findings of Pardo del Val and Fuentes (2003). As such, when educators are non-committal to the aforementioned changes, there will be a low chance of success in educational reform (Feng et al., 2020; Fullan, 2001).

Study Background

According to the Interim Strategic Plan 2011-2020 and the Malaysa Education Blueprint 2013-2025, the implementation of School-Based Assessment (SBA) taking place under the Ministry of Education (MOE) will lead to comprehensive improvements in current assessment techniques to enhance the quality in teaching and learning within the schools (Ministry of Education, 2012). SBA is a holistic evaluation method concurrent with the country's goal of producing a globally competitive workforce not only in terms of cognitive (intellectual) development, but also affective (emotional and spiritual) and psychomotor (physical) developments as per the National Philosophy for Education (Ministry of Education, 2012). SBA covers four assessment components including Assessment Centres, School Assessment, Psychometric Assessment, and Evaluation of Physical Activity, Sports

and Co-curricular Activities (PAJSK) (Malaysia Examinations Syndicate, 2018).

Problem Statement

After the implementation of the SBA, it has become more essential for instructional leaders in schools to understand the importance of educators' commitments to educational reforms. Previous studies showed that leadership had a positive relationship with the commitment to change in the public sector in which the significant effects of the implicit change, transformational, transactional, and leader-member exchange (LMX) leaderships on the commitment to change were demonstrated (Hechanova et al., 2018; Lo et al.,; Ritz et al., 2012; Yu et al., 2002). However, some studies reported different findings wherein leadership was not significantly correlated with the commitment to change (Herold et al., 2007; Liu, 2010; Santhidran et al., 2013; Thien, 2019). The discrepancy of these results requires further empirical research to determine the relationship between leadership and commitment to change.

Literature Review

Instructional Leadership

Leadership has been defined as the relationship between an individual and a society based on common goals wherein a group or an organisation acts accordingly to the instructions, rulings, and influence of the leaders to work effectively in striving for the common goals. Instructional leadership has been the spotlight of extensive research from the 1980s until the 1990s (Hallinger, 2003). Studies investigating the effectiveness of schools, implementation of changes, and educational improvements that had been carried out in many countries (Leithwood et al., 2008; Shaked, 2020). It is fundamental in understanding the concept of instructional leadership (Hallinger, 2003; Hallinger et al., 1994) and also corroborated the postulation that instructional leadership was the key factor for schools or educational institutions in generating effective learning outcomes (Hallinger, 2011). When the education sector was transforming, principals would be the primary instructional leaders in encouraging teachers to work towards academic goals, be conscientious in their job responsibilities, and become instrumental in ensuring the successful implementation of changes in schools (Al-Kiyumi & Hammad, 2020; Lahui-Ako, 2001; Wahab et al., 2020). Hence, instructional leadership is a vital factor in the success of a school and its achievements (Bada et al., 2020;

Carrier, 2011; Rahman et al., 2020; Sahin, 2011).

According to Hallinger and Murphy (1985), the behaviour of instructional leaders such as principals in education was crucial for the promotion and improvement of the teaching and learning process for the stakeholders including teachers, parents, and students in facilitating the development of the school planning, management, and culture. They propounded that instructional leadership consisted of three aspects, namely defining the mission of a school, managing instructional programmes productively, and fostering a conducive learning environment. In school settings, there were also ten dimensions of instructional leadership including setting well-defined goals, elucidating educational objectives, observing and evaluating specific instructions, coordinating curriculums, monitoring student progress, managing teaching quality, maintaining leadership visibility, incentivising the teaching process, promoting professional development, and motivating the learning process (Hallinger & Murphy, 1985). Besides, the definition of instructional leadership had further been expanded to incorporate the process of influencing the direction of a school, motivating its staff, and coordinating specific strategies in schools and classrooms for the enhancement of the teaching and learning process (Hallinger & Murphy, 2012).

Commitment to Change

Recently, many organisational reforms have been taken place in the education sector. It is therefore important to ensure that the educators sustain their commitments to accomplish appropriate alterations in educational institutions. When the educational stakeholders were committed to the indispensable changes, they were more inclined to perform the requisite tasks and lay the foundation in implementing changes (Kasımoğlu, 2021; Khalid & Norhafezah, 2011; Malik & Garg, 2017). As highlighted by Zainun et al. (2018), communication and participation are also critical processes for achieving change commitment. Therefore, employees should be told about the change, and also invited to participate in its execution. Employees' willingness to accept and support change is determined by the quality of change information provided and their level of involvement in the process. In other words, high-quality change communication and high-level engagement are predicted to have a favourable impact on employee commitment to change (Feng et al., 2020; Zainun et al., 2018).

Given the incessant concerns regarding the scarcity of research in the factors contributing to the acceptance of change, Herscovitch and Meyer (2002) had posited a modified version of Meyer and Allen's (1991) three-component model of organisational change. This modified model proposed that the aforementioned commitment might take various forms and have different effects on an individual in terms of their support for the changes (Meyer et al., 2007). Herscovitch and Meyer's (2002) model was considered to be a better predictor of the behavioural support for changes than that of Meyer and Allen (1991) because the organisational commitment which was a part of the committed 'actions' examined under their model was different from Meyer and Allen's model of organisational commitment that was more static. Therefore, this demonstrates that the workers obligated to implement the changes are related to the extent to how well they are kept informed, empowered, and properly compensated in sharing the same goals.

Furthermore, the commitment to change is also defined as a state of mind connecting relevant parties with the imperative actions for the successful implementation of change (Herscovitch & Meyer, 2002). The study of Herscovitch and Meyer (2002) described the three dimensions of commitment to change in an organisation encompassed the motivating factor of performing changes engendered from the beliefs that these changes would induce rewarding outcomes, the cost-effectiveness of progressing changes that influenced the levels of educational stakeholders' commitments, and eventually the occurrence of normative commitment depending on the stakeholders' perceptions as being obligatory in upholding the transformations. These three components of the commitment to change might vary on a scale from active rejection, passive rejection, obedience, cooperation, and ultimately to the advocacy of change.

Leadership and Commitment to Change

Based on the model of institutional change by Armenakis et al. (1999), leaders in their roles as the agents of change must reassure their subordinates that they were capable of executing changes with the continuous support of the said leadership, and clarify the advantages and benefits attained from the execution and implementation (Ling et al., 2018; Rahman et al., 2020). Thus, when the pedagogues are committed, the implemented changes will be institutionalised and perpetuated until future transformations are necessitated. Al Halbusi et al. (2017), Devos and Broeck (2001) and Santhidran et al. (2013) also emphasised the

obligations of the organisational leaders in empowering their relationships with the members of their respective organisations before encouraging the followers to commit themselves to make a difference. They suggested that leaders must ensure their employees equipped with both the vital knowledge and skills before carrying out their responsibilities effectively while also supporting and creating a conducive circumstance for the alterations to effectuate.

More recently, Thien and Adams (2021) concluded that leadership has a considerable beneficial effect on teachers' affective commitment to change. Teachers who feel a sense of ownership and are involved in the decision-making process are more inclined to embrace change, whereas teachers who do not have this opportunity are more likely to resist change in the workplace. In addition, teachers are more committed if they believe their school is headed by a leadership team that values openness, mutual trust, group cohesion, open communication, and clear responsibilities between leaders and teachers. The research also suggests that school administrators who guide, manage, and monitor teachers' instructional processes are more likely to motivate them to change. When principals provide feedback and support, teachers are more likely to stay committed (Waisy & Wei, 2020). Teachers appreciate evaluative feedback from school administrators since it provides helpful information for them to be committed to change.

Nonetheless, if the leaders fail to provide sufficient guidance to their followers through the metamorphoses, it might lead to dissatisfactions and diminutions in commitment to change which in turn would lead to the unsuccessful implementation of the aforementioned initiatives (Barnett, 2018; Kim & Lee, 2020). Some studies had manifested that leadership was positively correlated to the development of affective commitment to change wherein the findings indicated that the leadership served as a basis for goal orientations and confidence enhancements amongst the employees (Hechanova et al., 2018; Lo et al., 2010; Ritz et al., 2012; Van der Voet et al., 2016; Yalçın et al., 2021). Hence, the hypothesis is proposed as follows: Leadership has a positive relationship with the commitment to change.

Method

The sample of this study comprises of 402 secondary teachers randomly selected through stratified random sampling. The questionnaire used in this study was adapted and modified according to the research objectives and suitability. The Principal Instructional Management

Rating Scale (PIMRS) questionnaire developed by Hallinger was used in this study to measure principal instructional leadership based on three dimensions, namely (a) defining the School Mission, (b) managing the instructional program, and (c) developing a school learning climate. In addition, the Commitment to Change questionnaire that was developed by Herscovitch and Meyer (2002) was used in this study. Data was analysed using SPSS in the form of mean, standard deviation, and Pearson correlation analysis.

Results and Discussion

The means and standard deviations of all constructs, namely the principals' instructional leadership (M = 3.70, SD = 0.57), teachers' affective commitment to change (M = 4.16, SD = 0.67), teachers' normative commitment to change (M = 3.90, SD = 0.63), and teachers' continuance commitment to change (M = 2.02, SD = 0.83) are shown in Table 1 below.

Table 1. Level of Principals' Instructional Leadership and Teachers' Commitment to Change (Affective, Normative and Continuance)

Constructs	***M***	***SD***	**Level**
Instructional Leadership	3.70	0.57	High
Affective Commitment to Change	4.16	0.67	High
Normative Commitment to Change	3.90	0.63	High
Continuance Commitment to Change	2.02	0.83	Low

Note. Levels of instructional leadership and commitment to change (affective, normative and continuance): 1.00 – 2.33 = Low, 2.34 – 3.67 = Moderate, 3.67 – 5.00 = High.

The findings discovered that there was a significant relationship between principals' instructional leadership and teachers' affective commitment to change, normative commitment to change, and continuance commitment to change. Pearson correlation test showed a significant relationship between the instructional leadership and the affective commitment to change ($r = 0.44$, $p < 0.05$), normative commitment to change ($r = 0.54$, $p < 0.05$), and continuance commitment to change ($r = -0.32$, $p < 0.05$).

The significant relationship between principals' instructional leadership and teachers' affective commitment to change suggested that when teachers comprehended, believed, and

shared the common goals in implementing SBA changes in schools as conveyed by their instructional leaders, their levels of affective commitment to change would increase and could be perceived through their inclinations in implementing and supporting these changes. These findings are in line with the findings of studies by Omar and Chong (2020), Rahaman et al. (2020) and Van der Voet et al., (2016) wherein leadership produced significant effects on the employees' commitment to change in various employment sectors. Besides, there was also a significant relationship between principals' instructional leadership and teachers' normative commitment to change. This occurred when teachers had formed their notions regarding the importance, necessity and subsequent benefits of these implemented transformations and the supports from the school principals, leading to the development and ensuing adoption of the new norms. Apart from that, the results demonstrated a significant negative relationship between principals' instructional leadership and teachers' continuance commitment to change. This postulated that the teachers would support SBA changes when they had been provided with sufficient information, guidance, and required skills from the principals. The findings are in line with that of Khalid and Norhafezah (2011) and Parish et al. (2008).

This study discovered that instructional leadership had a noteworthy influence on the teachers' affective commitment to change, normative commitment to change, and continuance commitment to change both directly and indirectly, depending on the readiness for embracing changes when implementing the SBA system. As such, this study contributes to the empirical literature review of the relevant fields by enhancing the understanding of the importance of principals' instructional leadership to their teachers or educators, specifically the three types of commitment to change as analysed.

Moreover, this study supported the institutional change model developed by Armenakis et al. (1999). Principals who are the instructional leaders required to prepare their teachers in implementing the changes and elevate their commitment levels by providing comprehensive information, adequate support, and sufficient resources. Thus, this study could be utilised as a guideline for relevant parties or educational stakeholders when organising programmes and training for change implementation in the future. It is also recommended for future studies to identify other effects of instructional leadership on different constructs such as organisational commitment, openness to change, work outcomes due to change, and attitudes towards change as discussed in the previous studies.

Given that this study is a cross-sectional study, the findings of this study were analysed based on the data gathered at that particular period of data collection. Future research is suggested to conduct a qualitative or mixed-method study with the combination of questionnaire and various interviewing methods to obtain a deeper understanding apropos of the three types of commitment to change amongst the pedagogues.

Conclusion

In short, changes to the existing educational structure from the implementation of the SBA system call for strong commitments from the principals who act as the school management leaders and also the teachers who serve as the primary catalyst for this process of transformation. Principals are the agents of change in ensuring the schools accomplish their goals of change implementation (Hallinger, 2003; Jainabee & Jamelaa, 2011; Kursunoglu & Tanrıogen, 2009) while maintaining high levels of teachers' commitment to change. As such, high levels of commitments from teachers in executing organisational alterations to their schools would accelerate the process of metamorphosis needed in education sector.

References

Al-Kiyumi, A., & Hammad, W. (2020). Preparing Instructional Supervisors for Educational Change: Empirical Evidence from the Sultanate of Oman. *SAGE Open, 10*(2). https://doi.org/10.1177/2158244020935905.

Al Halbusi, H., Tehseen, S., & Ramayah, T. (2017). The Impact of Organizational Justice on the Ethical Leadership under the Moderating Influence of Perceived Support: A Conceptual Study. *Malaysian Journal of Business and Economics, 4*(1).

Armenakis, A., Harris, S., & Feild, H. (1999). Making change permanent: A model for institutionalizing change interventions. *Research in Organizational Change and Development, 12*, 97–128.

Bada, H. A., Ariffin, T. F. T., & Nordin, H. (2020). Teachers' perception of principals' instructional leadership practices in Nigeria. *Universal Journal of Educational Research, 8*(10), 4459–4469. https://doi.org/10.13189/ujer.2020.081013.

Barnett, D. E. (2018). Online adjunct faculty: A quantitative examination of the predictive relationship between leadership and job satisfaction. *International Journal of Research in Education and Science, 4*(1), 226–236. https://doi.org/10.21890/ijres.383159.

Berkovich, I. (2011). No we won't! Teachers' resistance to educational reform. *Journal of Educational Administration, 49*(5), 563–578.

Carrier, L. (2011). *What is instructional leadership and what does it look like in practice ? A multi-case case study of elementary school principals who have led schools from being identified as under performing to performing.* (Unpublished doctoral dissertation). University of Massachusetts, Amherst, Massachusetts.

Feng, C., Robin, M., Fan, L., & Huang, X. (2020). Commitment to change: Structure clarification and its effects on change-related behaviors in the Chinese context. *Personnel Review, 49*(5), 1069–1090. https://doi.org/10.1108/PR-05-2018-0163.

Fullan, M. (2001). *The new meaning of educational change (3rd ed.).* New York: Teachers College Press.

Fullan, M., (2007). *The Jossey-Bass Reader on Educational Leadership (2nd ed.).* San Francisco: John Wiley & Sons Inc.

Guerrero, J. M., Teng-Calleja, M., & Hechanova, M. R. M. (2018). Implicit change leadership schemas, perceived effective change management, and teachers' commitment to change in secondary schools in the Philippines. *Asia Pacific Education Review, 19*(3), 375–387. https://doi.org/10.1007/s12564-018-9545-6.

Hallinger, P. (2003). Leading educational change: reflections on the practice of instructional and transformational leadership. *Cambridge Journal of Education, 33*(3), 329–352.

Hallinger, P. (2011). Leadership for learning: lessons from 40 years of empirical research. *Journal of Educational Administration, 49*(2), 125–142.

Hallinger, P., & Murphy, J. (1985). Assessing the instructional management behavior of principals. *The Elementary School Journal, 86*(2), 217–247.

Hallinger, P., & Murphy, J. F. (2012). Running on empty? Finding the time and capacity to lead learning. *NASSP Bulletin, 55*(5), 1–17.

Hallinger, P., Taraseina, P., & Miller, J. (1994). Assessing the instructional leadership of secondary school principals in Thailand. *School Effectiveness and School Improvement, 5*(4), 321–348.

Hechanova, M. R. M., Caringal-Go, J. F., & Magsaysay, J. F. (2018). Implicit change leadership, change management, and affective commitment to change: Comparing academic institutions vs business enterprises. *Leadership and Organization Development Journal, 39*(7), 914–925. https://doi.org/10.1108/LODJ-01-2018-0013.

Herold, D. M., Fedor, D. B., & Caldwell, S. D. (2007). Beyond change management: A multilevel investigation of contextual and personal influences on employees'

commitment to change. *Journal of Applied Psychology, 92*, 942–951.

Herscovitch, L., & Meyer, J. P. (2002). Commitment to organizational change: Extension of a three-component model. *Journal of Applied Psychology, 87*(3), 474–487. https://doi.org/10.1037//0021-9010.87.3.474.

Jainabee, M. K., & Jamelaa, B. A. (2011). Promoting learning environment and attitude towards change among secondary school principals in Pahang Malaysia: Teachers' Perceptions. *Procedia - Social and Behavioral Sciences, 28*, 45–49.

Kasımoğlu, M. (2021). Evaluation of the Motivation Levels of Physical Education Teachers. *International Journal of Research in Education and Science, 7*(2), 412–425. https://doi.org/10.46328/ijres.2087.

Khalid, D., & Norhafezah, Y. (2011). Change in higher learning institutions: Lecturers' commitment to organizational change (C2C). *International Journal of Business and Social Science, 2*(21), 182–195.

Kim, T., & Lee, Y. (2020). Principal instructional leadership for teacher participation in professional development: evidence from Japan, Singapore, and South Korea. *Asia Pacific Education Review, 21*(2), 261–278. https://doi.org/10.1007/s12564-019-09616-x.

Kursunoglu, A., & Tanrıogen, A. (2009). The relationship between teachers' perceptions towards instructional leadership behaviors of their principals and teachers' attitudes towards change. *Procedia - Social and Behavioral Sciences, 1*(1), 252–258.

Lahui-Ako, B. (2001). The instructional leadership behaviour of Papua New Guinea high school principals - A provincial case study. *Journal of Educational Administration, 39*(3), 233–265.

Leithwood, K., Harris, A., & Hopkins, D. (2008). Seven strong claims about successful school leadership. *School Leadership and Management: Formerly School Management. 28*(1), 27-42.

Ling, B., Guo, Y., & Chen, D. (2018). Change leadership and employees' commitment to change: A multilevel motivation approach. *Journal of Personnel Psychology, 17*(2), 83–93. https://doi.org/10.1027/1866-5888/a000199.

Liu, Y. (2010). *When Change Leadership Impacts Commitment To Change and When It Doesn't: A Multi-level Multi dimensional Investigation.* (Unpublished doctoral dissertation). Georgia Institute of Technology, Atlanta, Georgia.

Lo, M. C., Ramayah, T., & Run, E. C. de. (2010). Does transformational leadership style foster commitment to change? The case of higher education in Malaysia. *Procedia -*

Social and Behavioral Sciences, 2, 5384–5388.

Malaysia Examinations Syndicate. (2018). *Panduan Pelaksanaan Pentaksiran Berasaskan Sekolah Edisi ke-2.* Putrajaya: Kementerian Pendidikan Malaysia.

Malik, P., & Garg, P. (2017). The relationship between learning culture, inquiry and dialogue, knowledge sharing structure and affective commitment to change. *Journal of Organizational Change Management, 30*(4), 610–631. https://doi.org/10.1108/JOCM-09-2016-0176.

McShane, S. & VonGlinow, M. A. (2005). *Organizational Behaviour: Emerging Realities for the Workplace Revolution.* 3rd Ed. New York: McGraw-Hill.

Meyer, J. P., & Allen, N. J. (1991). A three-component conceptualization of organizational commitment. *Human Resourse Management Review, 1*(1), 61–89.

Meyer, J. P., Srinivas, E. S., Lal, J. B., & Topolnytsky, L. (2007). Employee commitment and support for an organizational change: Test of the three-component model in two cultures. *Journal of Occupational and Organizational Psychology, 80*, 185–211.

Ministry of Education Malaysia. (2012). *Malaysia Education Blueprint 2013-2025*. Putrajaya: KPM.

Ministry of Education. (2012). *Pelan Strategik Interim Kementerian Pelajaran Malaysia 2011-2020*. Putrajaya: KPM.

Mohammed Sani, I. & Mohd Izham, M. H. (2012). *Pengurusan perubahan makro dalam pendidikan.* Bangi: Universiti Kebangsaan Malaysia.

Omar, H. W. & Chong, C. W. (2020). Transformational leadership and affective commitment to change: the roles of readiness for change and type of university. *International Journal of Innovation, Creativity and Change, 10*(10), 459-482.

Pardo del Val, M. & Fuentes, M.C. (2003). Resistance to change: A literature review and empirical study. *Management Decision, 41*(2), 148-55.

Parish, J. T., Cadwallader, S., & Busch, P. (2008). Want to, need to, ought to: Employee commitment to organizational change. *Journal of Organizational Change Management, 1,* 32–52.

Rahman, A. R. A., Tahir, L. M., Anis, S. N. M., & Ali, M. F. (2020). Exploring challenges in practicing instructional leadership: Insights from senior secondary principals. *Universal Journal of Educational Research, 8*(11 C), 83–96. https://doi.org/10.13189/ujer.2020.082310.

Rahaman, H. M. S., Camps, J., Decoster, S. and Stouten, J. (2019). Ethical leadership in times of change: the role of change commitment and change information for

employees' dysfunctional resistance. *Personnel Review, 50*(2), 630-647.

Riaz, A., Zahid Mahmood, H., Fatima, M., & Usman, M. (2020). Scope of Tunnel Technology Transfer: Adoption Productivity and Efficiency Analysis View project Change Readiness and Commitment to Change. *Pakistan Journal of Commerce and Social Sciences, 14*(1), 334–367. https://www.researchgate.net/publication/340769654.

Ritz, A., Shantz, A., Alfes, K., & Arshoff, A. S. (2012). Who needs leaders the most? The interactive effect of leadership and core self-evaluations on commitment to change in the public sector. *International Public Management Journal, 15*(2), 160–185.

Sahin, S. (2011). Instructional leadership in Turkey and The United States : Teachers' perspectives. *Problems of Education in The 21st Century, 34*, 122–137.

Santhidran, S., Chandran, V. G. R., & Borromeo, J. (2013). Enabling organizational change – leadership, commitment to change and the mediating role of change readiness. *Journal of Business Economics and Management, 14*(2), 348–363.

Shaked, H. (2020). Social justice leadership, instructional leadership, and the goals of schooling. *International Journal of Educational Management, 34*(1), 81–95. https://doi.org/10.1108/IJEM-01-2019-0018.

Thien, L. M. (2019). Distributive Leadership Functions, Readiness for Change, and Teachers' Affective Commitment to Change: A Partial Least Squares Analysis. *SAGE Open, 9*(2). https://doi.org/10.1177/2158244019846209.

Thien, L. M. & Adams, D. (2021). Distributed leadership and teachers' affective commitment to change in Malaysian primary schools: the contextual influence of gender and teaching experience. *Educational Studies, 47*(2), 179-199.

Van der Voet, J., Kuipers, B. S., & Groeneveld, S. (2016). Implementing Change in Public Organizations: The relationship between leadership and affective commitment to change in a public sector context. *Public Management Review, 18*(6), 842–865. https://doi.org/10.1080/14719037.2015.1045020.

Wahab, J. A., Mansor, A. Z., Hussin, M., & Kumarasamy, S. (2020). Headmasters' instructional leadership and its relationship with teachers' performance. *Universal Journal of Educational Research, 8*(11 A), 97–102.

Waisy, O. H., & Wei, C. C. (2020). Transformational Leadership and Affective Commitment to Change: The Roles of Readiness for Change and Type of University. *International Journal of Innovation, Creativity and Change, 10*(10), 459–482.

Yalçın, S., Akan, D., & Yıldırım, İ. (2021). Investigation of the Organizational Commitment and Psychological Well-being Levels of Academicians. *International Journal of*

Research in Education and Science, 7(2), 525–544. https://doi.org/10.46328/ijres.1346.

Yan, C. (2012). 'We can only change in a small way': A study of secondary English teachers' implementation of curriculum reform in China. *Journal Educational Change, 13*(4), 431-447.

Yu, H., Leithwood, K., & Jantzi, D. (2002). The effects of transformational leadership on teachers' commitment to change in Hong Kong. *Journal of Educational Administration, 40*(4/5), 368–389.

Zainun, N. F. H., Johari, J. & Adnan, Z. (2018). Stressor factors, internal communication and commitment to change among administrative staff in Malaysian public higher-education institutions. *On the Horizon, 26*(4), 291-306.

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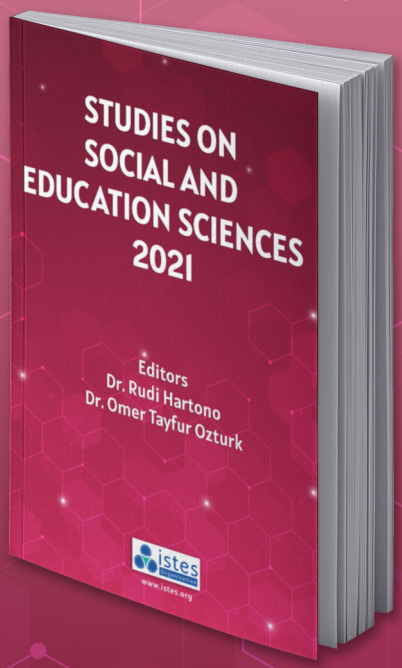
Studies in the fields of education and social sciences have always been important in terms of their impacts on society. These studies have gained even more importance during the COVID-19 pandemic process. The impact of the pandemic period on children, schools and society has been demonstrated through such studies. This book also includes studies conducted during the pandemic period. The studies in this book contribute to the fields of education and social sciences by different research methods, participants, and contexts and add a global perspective to these fields. The book is divided into two sections related to studies on social sciences and education sciences. Each section includes four chapters. The chapter's contributors are from the following countries: the United States, Turkey, China, Indonesia, Russia, Rwanda, and Malaysia.



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